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MISSION REPORT
SOCFINDO Plantations
22 May - 5 June 1992
Jean-Marie Eschbach

CONTENTS

I. INTRODUCTION

This mission follows on from the previous missions carried out by Mr. Gener, in connection with tapping recommendations on SOCFINDO estates.

- Tanah Besih, 25/05/92
- Tanjung Maria, 26 and 27/05/92
- Lima Puluh, 29 and 30/05/92
- Aek Pamienke, 1 and 2/06/92
- Halimbe, 3/06/92

We should particularly like to thank Messrs. Tampubolon and Sitepu for the excellent organization of these visits and the fruitful discussions we had throughout these visits.

We also thank the group managers and estate managers for the time they gave up and for their hospitality.

II. ESTATE VISITS

General comments

The analysis concentrated on plots being tapped in 1991, tapped in 1/2 S d/4 N or 1/4 S d/4 UTS.

The area distribution by age and estate (figure 1) is very uneven. Young crops are dominant at Halimbe and Aek Pamienke, with crops 20-21 years old at Aek Pamienke.

Mean production was 1,304 kg/ha with only 276 trees/ha, which corresponds to 4.7 kg/tree.

Table 1 below shows that Tanah Besih has the highest kg/ha, due to more trees/ha and kg/tree.

Table 1

PLANTATION	AREA (ha)	KG/HA	TREE/HA	KG/TREE
Tanjung Maria	857	1295	269	4,8
Tanah Besih	1047	1566	309	5,1
Lima Puluh	1263	1265	254	5,0
Aek Pamienke	3068	1457	293	5,0
Halimbe	1132	694	227	3,1
TOTAL	7367	1304	276	4,7

Production is increasing at the Halimbe estate and mean kg/tree can be estimated at 5 kg for the other estates.

The lowest tree density is at Lima Puluh (254 trees/ha).

Figure 2 shows the changes in kg/ha, the number of trees and production per tree according to age. An increase in kg/ha is seen in young plantings up to 14 years, due to the increase in kg/tree. From 20 years onwards, the drop in kg/ha is primarily due to a fall in the number of trees/ha. The poor performance of trees aged 16 and 17 years corresponds to the Aek Pamienke plots (435 ha) partly planted on bottomlands.

Production per tree is higher than that obtained on commercial estates in Malaysia - figure 2a (Ref. RRIM, Planters' Bull 4/90).

The changes in the density of tapped trees (figure 3) at each of the 5 estates reveals a low number of trees at Halimbe, where the areas need to be revised, given the parts replanted. The 1969 plantings (22 years) at Lima Puluh are particularly sparse.

FIGURE N° 1

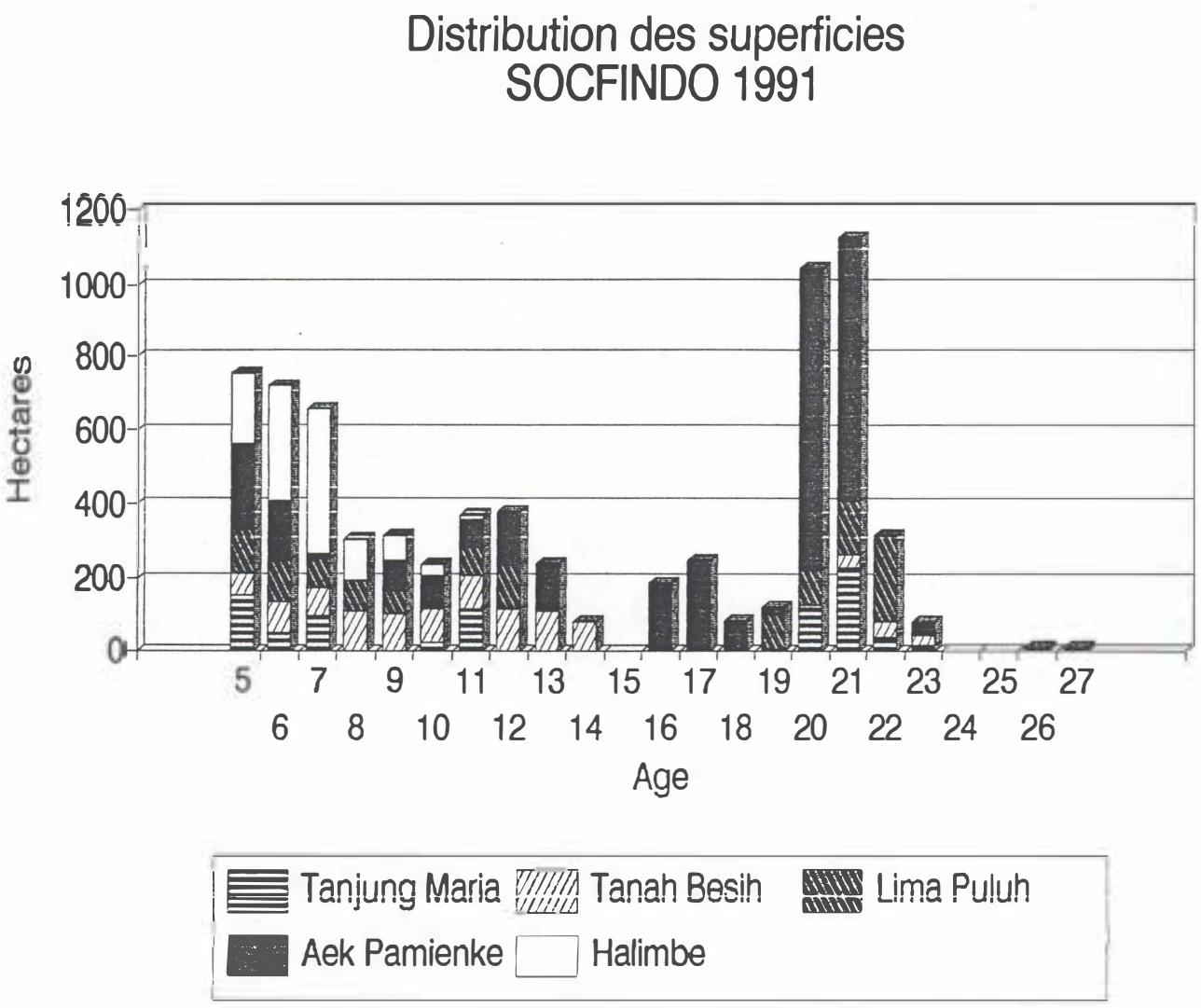

Distribution des superficies
SOCFINDO 1991
Hectares
1200
1000
800
600
400
200
0
5 7 9 11 13 15 17 19 21 23 25 27
6 8 10 12 14 16 18 20 22 24 26
Age
Tanjung Maria
Tanah Besih
Lima Puluh
Aek Pamienke
Halimbe

FIGURE N° 2

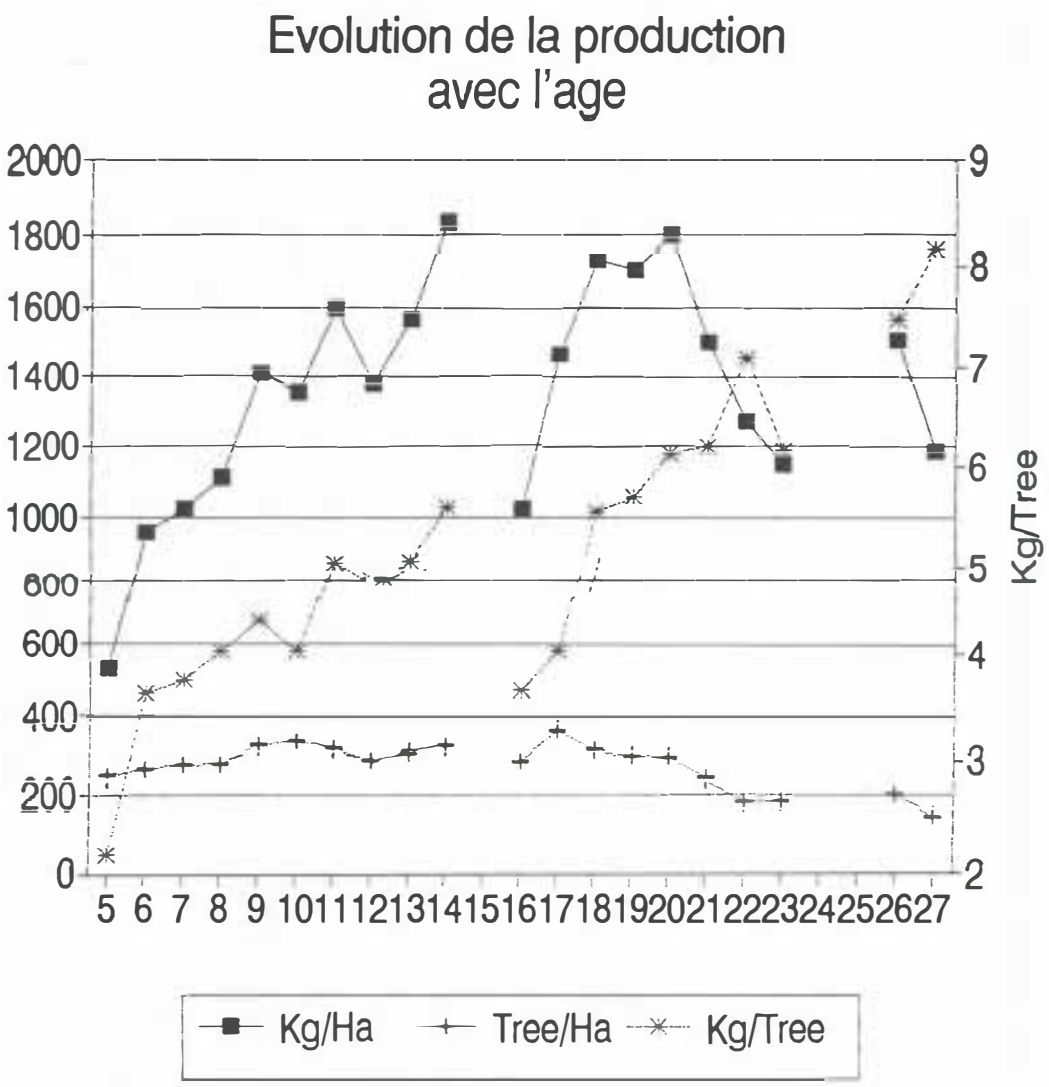

Evolution de la production
avec l'age
2000
1800
1600
1400
1200
1000
800
600
400
200
0
9
8
7
6
5
4
3
2
Kg/Tree
5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27
Kg/Ha
Tree/Ha
Kg/Tree

FIGURE N° 2 bis

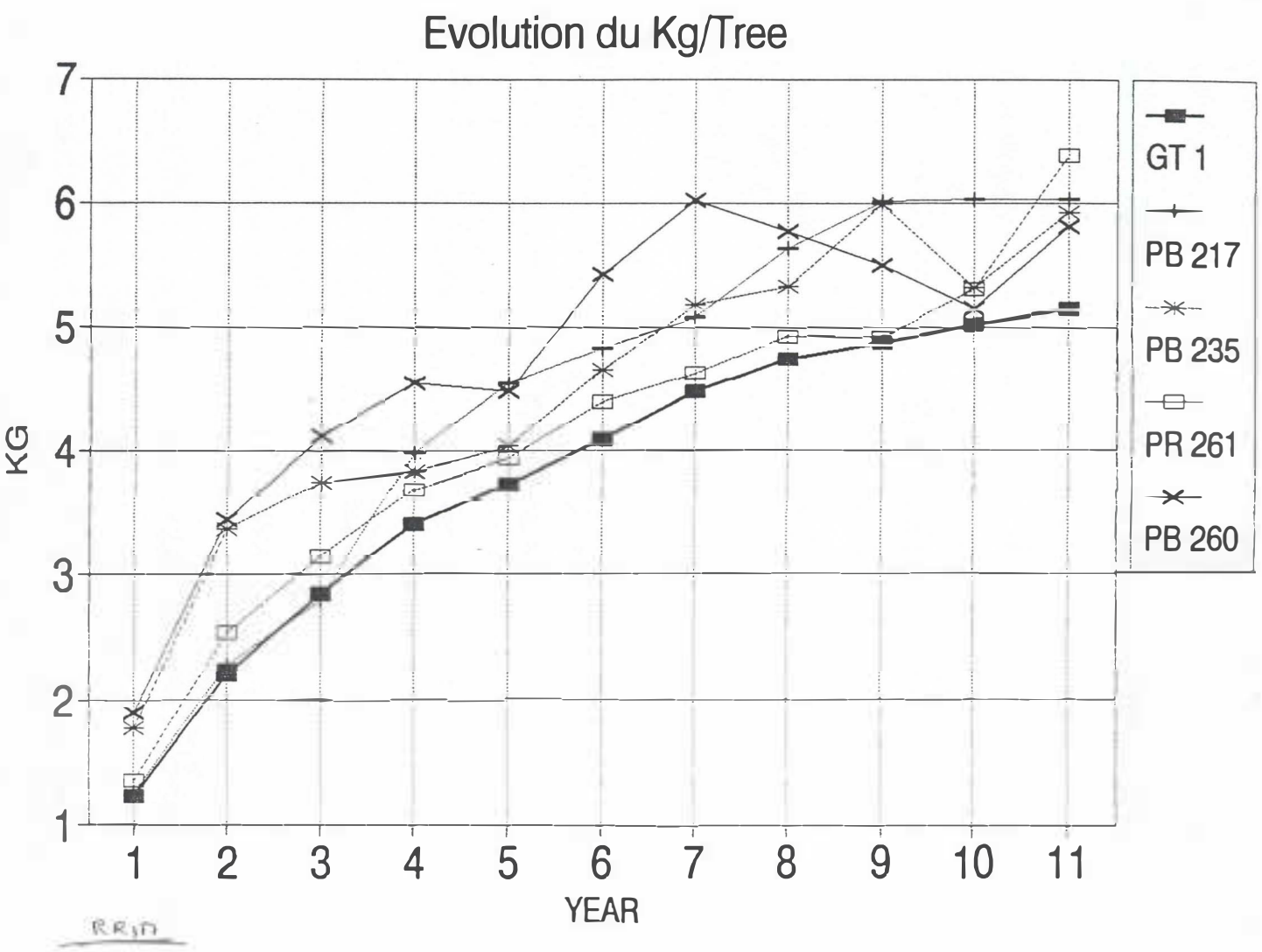
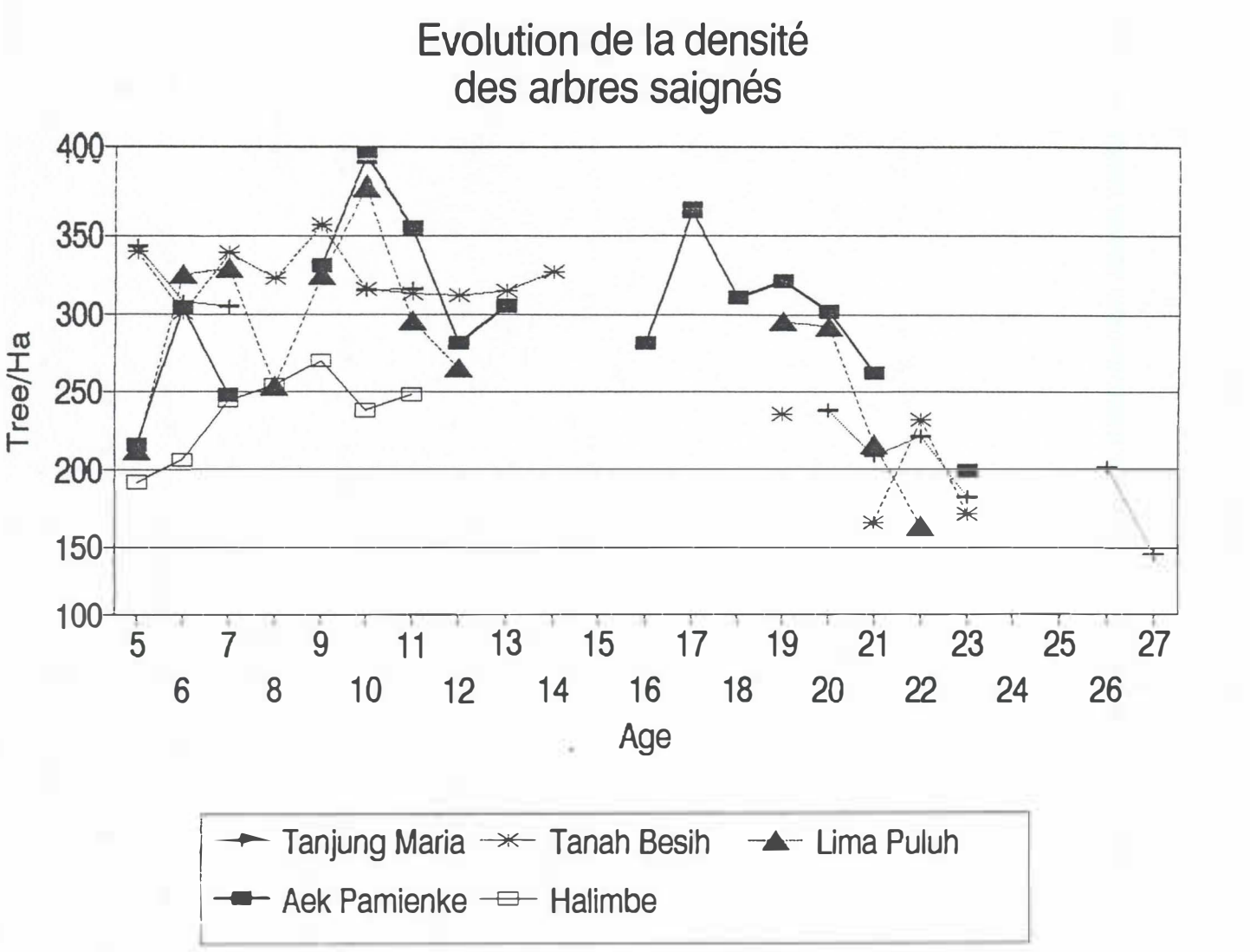


FIGURE N° 3


Evolution de la densité
des arbres saignés
Tree/Ha
400
350
300
250
200
150
100
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
Age
Tanjung Maria
Tanah Besih
Lima Puluh
Aek Pamienke
Halimbe

Compared to 1990, there has been a substantial drop in the number of trees (more than 100 trees/ha) in the following blocks:

TM: 4 - 17 - 19 - 20 - 21 and 22
LP: 6
AP: 20 - 25 - 76

The kg/tree rate (figure 4) is good for the young crops at Tanah Besih. Elsewhere, it is lower for the 1981 crops.

The largest drop, compared to 1990 (more than 1 kg/tree) was seen in the following blocks:

TM: 2 - 5 - 18 and 21
TB: 1 - 6 - 25 - 29 - 30 - 36 and 39
LP: 2 - 5 - 6 - 10 - 13 - 22 - 23 - 31 - 32 - 35 and 38

The kg/ha (figure 5) per age and per estate incorporates the previous parameters. The 1977 to 1979 extensions at Tanah Besih, along with the 1971 and 1972 plantings at Aek Pamienke are the highest yielders.

The following sections show the production situation per estate in 1991, for each of the reference blocks and associated blocks, with a panel diagram and tapping recommendations for 1993.

Table 2 below reveals a reduction in the areas being tapped in upward 1/4 S, with the exception of Aek Pamienke (1970 and 1971 plantings previously in downward 1/2 S).

Table 2: Distribution of the areas studied (ha) per tapping system

SYSTEME	N		UTS	
Année	1992	1993	1992	1993
Tanjung Maria	523	948	425	0
Tanah Besih	911	993	193	111
Lima Puluh	797	1309	581	69
Aek Pamienke	2375	1962	995	1408
Halimbe	1182	1182	0	0
TOTAL	5788	6394	2195	1588

As regards the stimulation method, a trial will be conducted at Aek Pamienke on 4 tapping tasks, to compare application on the cut after removal of tree scrap and application on the panel.

In fact, the first application method seems to lead to a loss in

stimulant effectiveness: latex exudation and stimulant runoff into cup (article in annex).

As regards Latex Diagnosis, studies are currently being conducted to draw up reference values for use in 1993.

FIGURE N° 4

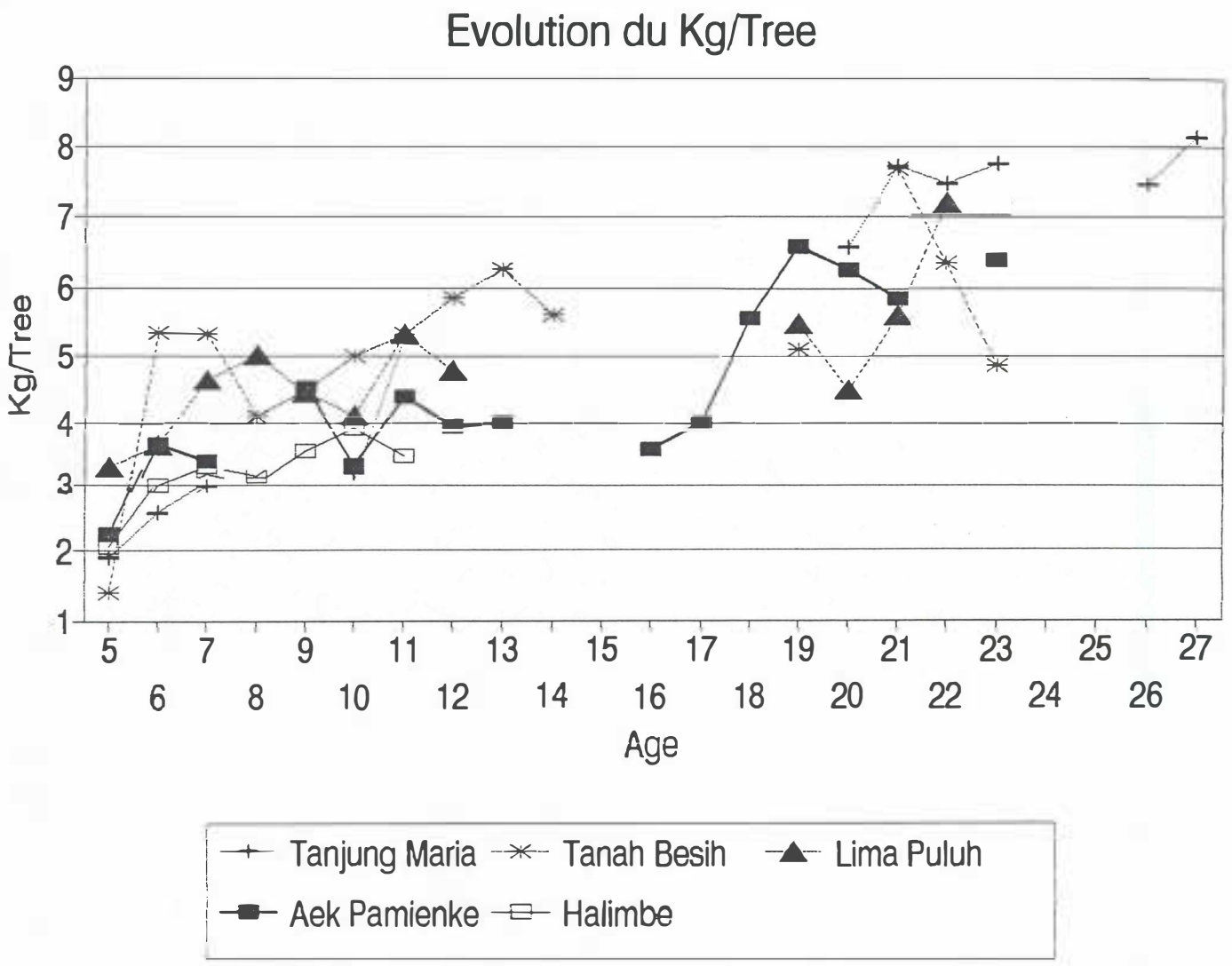
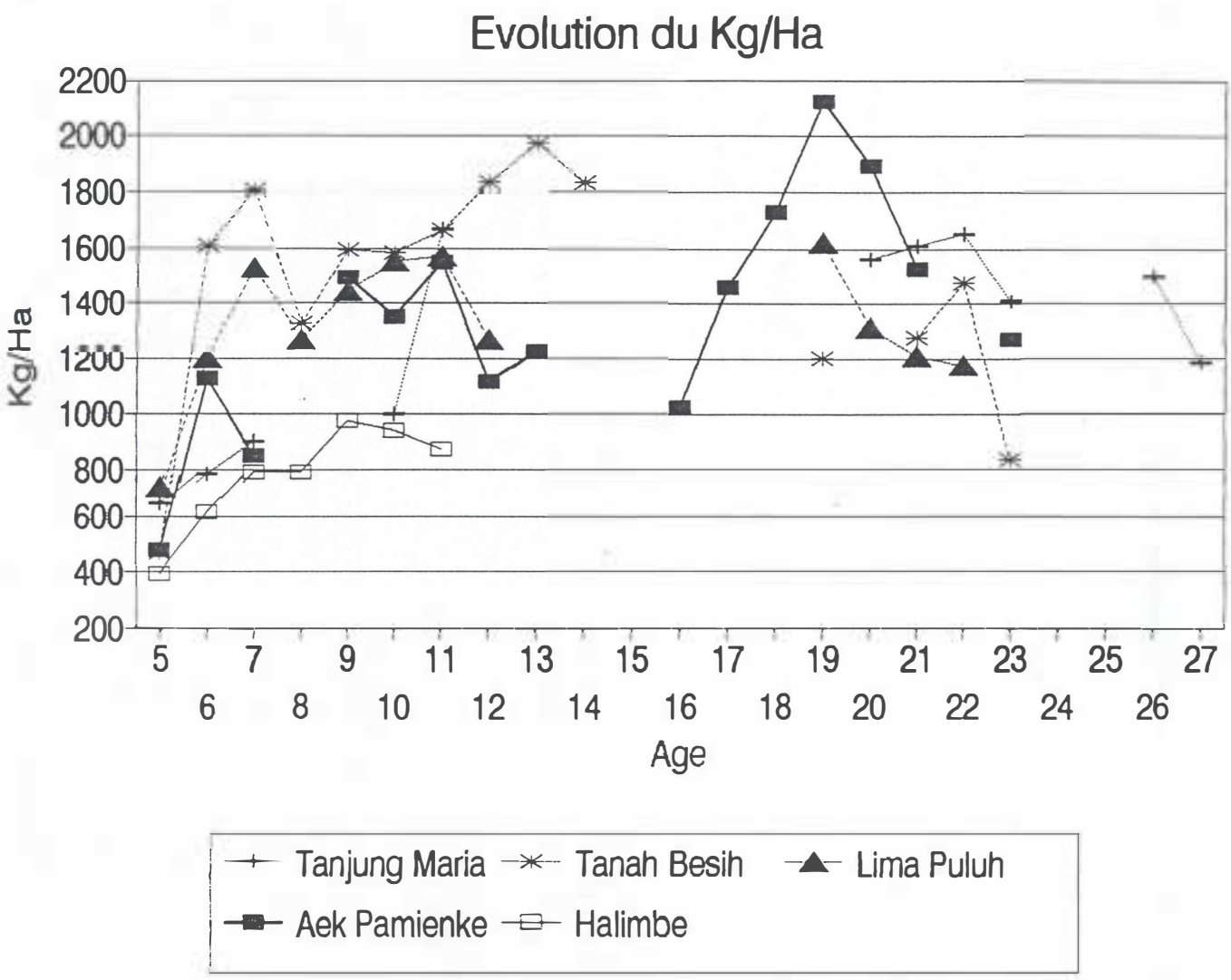

Evolution du Kg/Tree
Kg/Tree
9
8
7
6
5
4
3
2
1
5 7 9 11 13 15 17 19 21 23 25 27
6 8 10 12 14 16 18 20 22 24 26
Age
Tanjung Maria
Tanah Besih
Lima Puluh
Aek Pamienke
Halimbe

FIGURE N° 5


Evolution du Kg/Ha
Kg/Ha
2200
2000
1800
1600
1400
1200
1000
800
600
400
200
5 7 9 11 13 15 17 19 21 23 25 27
6 8 10 12 14 16 18 20 22 24 26
Age
Tanjung Maria
Tanah Besih
Lima Puluh
Aek Pamienke
Halimbe

III. TAPPING TRIAL TM-AE-01

A statistical analysis carried out on unprocessed production data revealed no significant differences between plots.

A visit to the trial on 27th May revealed that the land was suitable and the tapping panels were in satisfactory condition.

The trial therefore began at the end of May as per the protocol in the annex, after drawing up a tapping and stimulation schedule with those in charge.

When making the complete survey at the outset, a distinction should be made between trees with a broken trunk (BT) and dry (BB) or necrotic (BN) trees.

Tapped trees should be recorded every 3 months.

Two tappers have been appointed to the trial, which is tapped every day.

Tapper 1: replicates A and B
Tapper 2: replicates C and D

TANJUNG MARIA

Production was low (figure 6) in the following blocks:

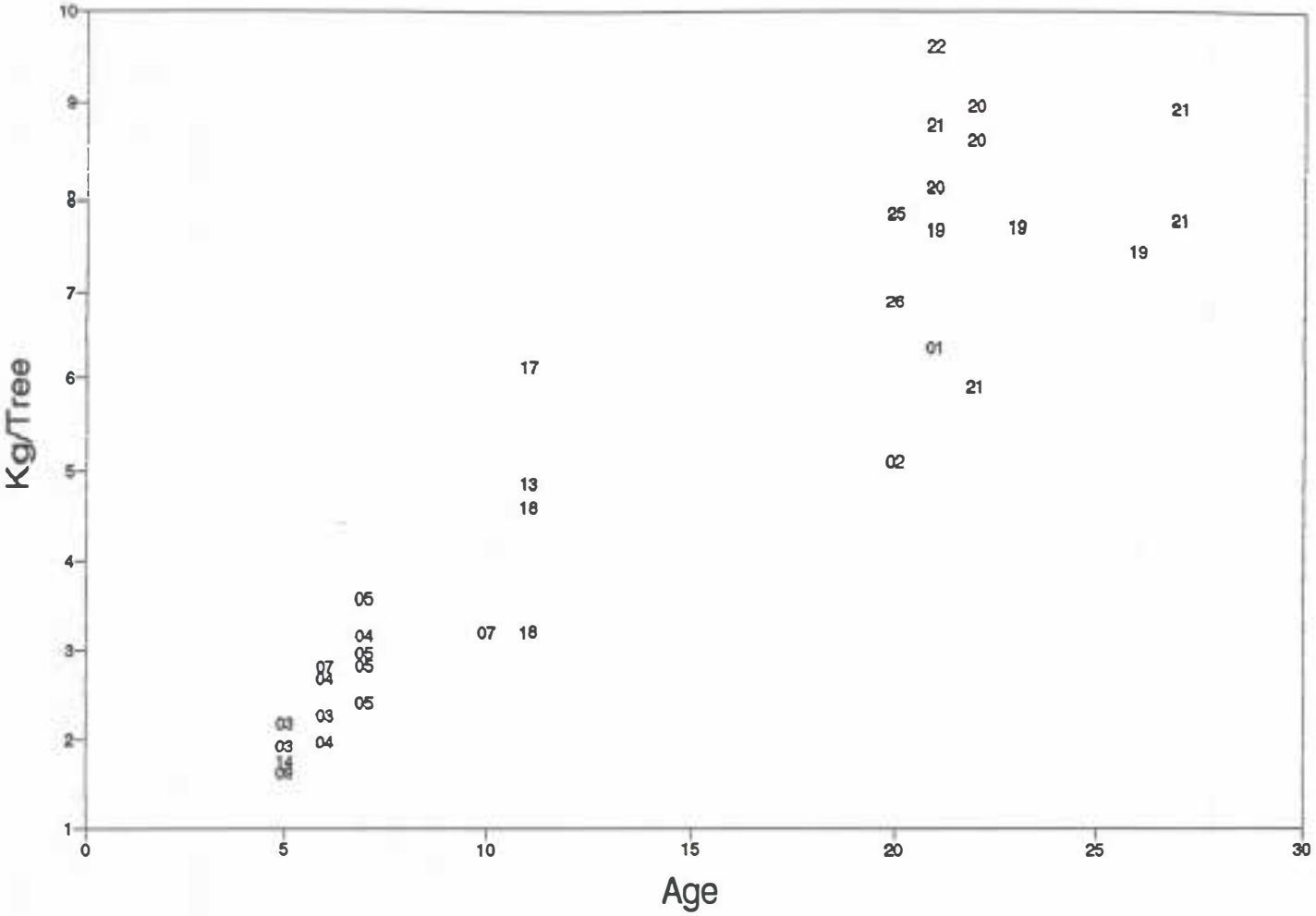
No. 5: PB 235, not alternated in 3rd year
No. 7: GT 1, with a 70 cm cut
No. 18: AVROS 2037 (2 ha)
No. 2: GT 1, 1971
No. 21: GT 1, 1969, production better than in 1990

Particular attention should be paid to tapping quality, especially on virgin bark.

Tapping in d/4 and d/5 has been introduced in block 17.

FIGURE N° 6

TANJUNG MARIA 1991



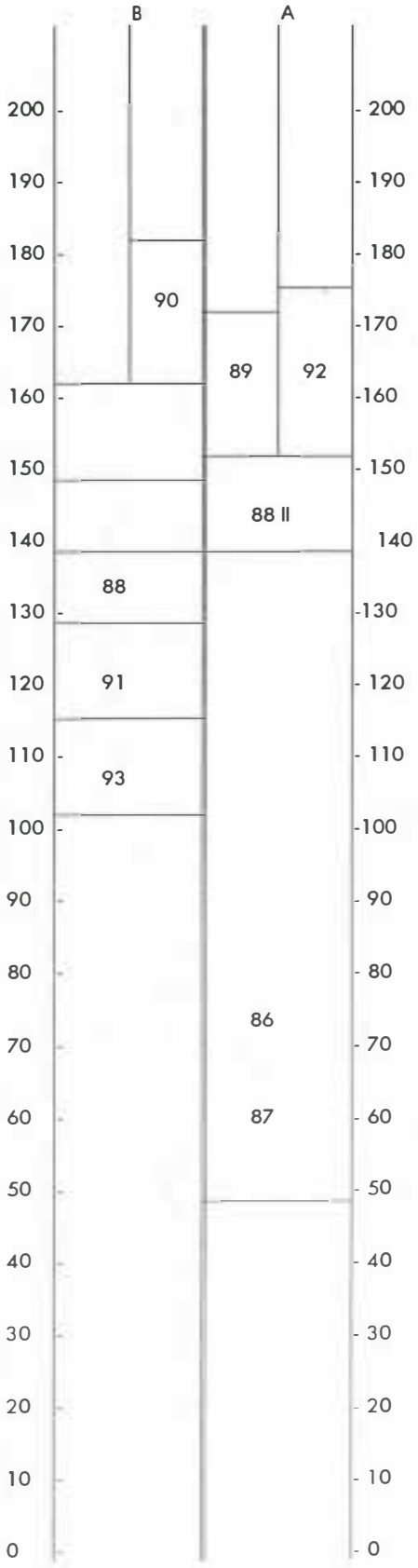
Block. WQ 1

TANJUNG MARIA

BLOCK	Ref. block	Planting Year	CLONE	Area Ha	Tapping 1992	System 1993
01	1	1970	GT 1	61,00	UTS	N
02	1	1971	GT 1	23,50	UTS	N
03	4	1985	PB 235	0,60	N	N
03	3	1986	PB 235	68,70	N	N
03	3	1986	PB 260	6,34	N	N
04	5	1984	PR 261	9,00	N	N
04	4	1985	PB 235	36,06	N	N
04	4	1985	PB 260	9,00	N	N
05	5	1984	GT 1	29,94	N	N
05	5	1984	PB 235	24,00	N	N
05	5	1984	PB 260	23,52	N	N
05	5	1984	PR 255	7,20	N	N
07	7	1981	GT 1	22,00	N	N
07	4	1985	PB 260	3,18	N	N
08	8	1987	PB 235	59,93	N	N
08	8	1987	PR 261	21,30	N	N
09	3	1986	PB 260	59,48	N	N
13	17	1980	AV 2037	29,29	N	N
14	3	1986	PB 260	17,10	N	N
14	3	1986	PR 261	10,00	N	N
17	17	1980	GT 1	59,65	N	N
18	17	1980	AV 2037	2,45	N	N
18	17	1980	GT 1	24,70	N	N
19	19	1965	GT 1	9,45	UTS	N
19	19	1968	GT 1	14,68	UTS	N
19	19	1970	AV 2037	47,39	UTS	N
20	20	1969	GT 1	19,66	UTS	N
20	20	1969	TR 1515	5,34	UTS	N
20	20	1970	GT 1	64,18	UTS	N
21	21	1964	AV 427	3,64	UTS	N
21	21	1964	GT 1	5,16	UTS	N
21	21	1969	GT 1	11,01	UTS	N
21	21	1970	GT 1	30,15	UTS	N
22	20	1970	GT 1	28,70	UTS	N
25	26	1971	GT 1	16,74	UTS	N
26	26	1971	GT 1	84,40	UTS	N

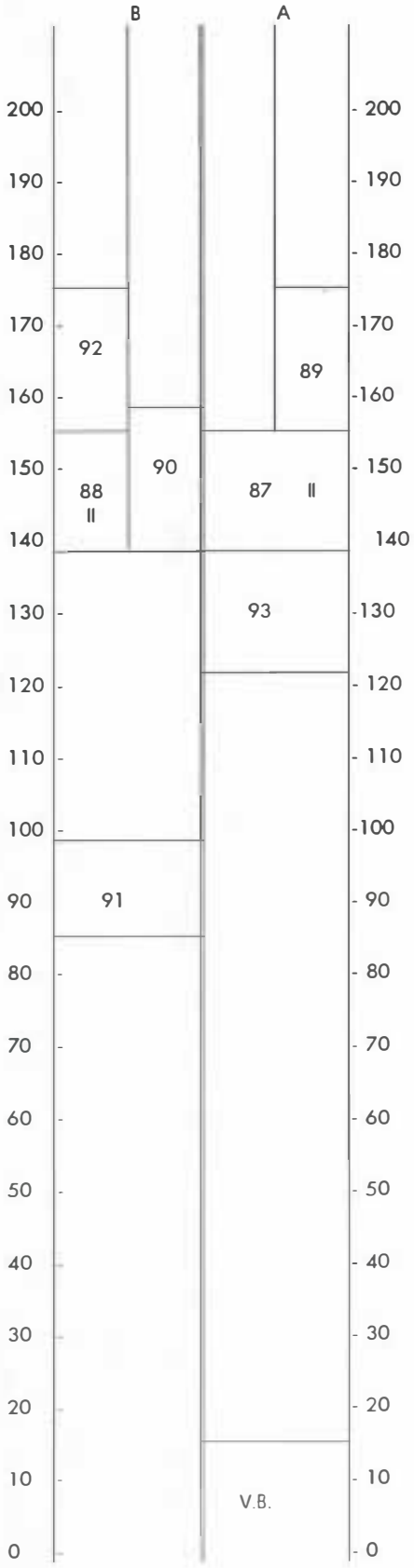
Date of visit : 26/5/92
Name of the plantations : TANJUNG MARIA
Block : 21
area : 50 ha
clone : GT 1 = 46 h - AVROS 427 = 4 ha
date of planting : 64/69/70
date of opening :

TN. W21



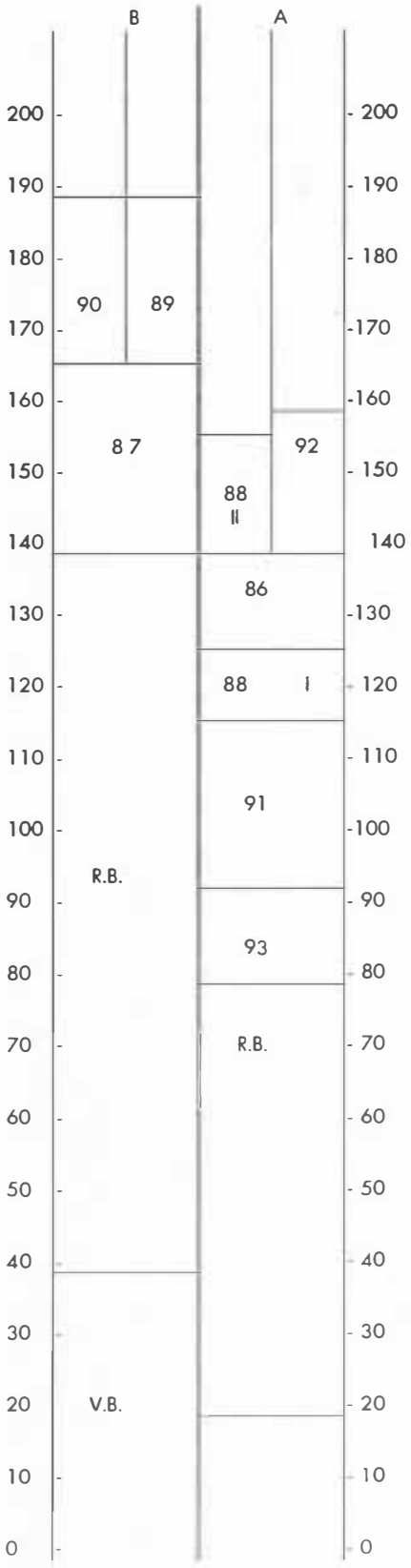
BLOCKS	21	21	21	21
Ref. block	21	21	21	21
PLANTING	1964	1964	1969	1970
CLONE	AV 427	GT 1	GT 1	GT 1
Area (Ha)	3,64	5,16	11,01	30,15
Stand 1990	126	215	417	279
1991	106	173	313	194
1992				
Kg/Ha 1990	1429	1146	1825	1573
1991	952	1353	1847	1703
1992				
Kg/Tree 1990	11,4	5,3	4,4	5,6
1991	9,0	7,8	5,9	8,8
1992				
Tapping 1990	UTS	UTS	UTS	UTS
System 1991	N	N	N	N
1992	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N
Stim. g/tree	1	1	1	1
frequency	10/y	8/y	8/y	8/y
% Ethrel	5.0%	5.0%	5.0%	5.0%
a.i./tree	500	400	400	400

Date of visit : 26/5/92
Name of the plantations : TANJUNG - MARIA
Block : 19
area : 62 ha
clone : AVROS 2037 = 47 ha - GT 1 = 24 ha
date of planting : 65/68/70
date of opening :



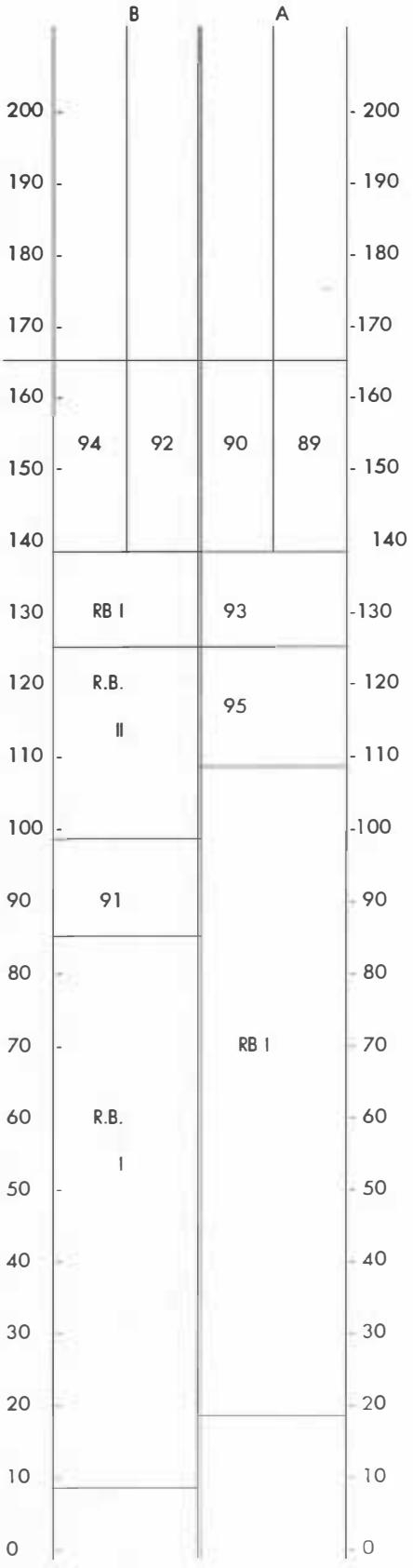
BLOCKS	19	19	19
Ref. block	19	19	19
PLANTING	1965	1968	1970
CLONE	GT 1	GT 1	AV 2037
Area (Ha)	9,45	14,68	47,39
Stand 1990	219	288	289
1991	201	182	189
1992			
Kg/Ha 1990	1404	1481	1322
1991	1504	1409	1455
1992			
Kg/Tree 1990	6,4	5,1	4,6
1991	7,5	7,7	7,7
1992			
Tapping 1990	UTS	UTS	UTS
System 199	N	N	N
199	UTS	UTS	UTS
TS 1993	N	N	N
Stim. g/tree	1	1	1
frequency	8/y	8/y	10/y
% Ethrel	5.0%	5.0%	5.0%
a.i./tree	400	400	500

Date of visit : 26/5/92
Name of the plantations : TANJUNG - MARIA
Block : 20 (associated blocks : 22)
area : 89 ha
clone : GT1
date of planting : 69/70
date of opening :



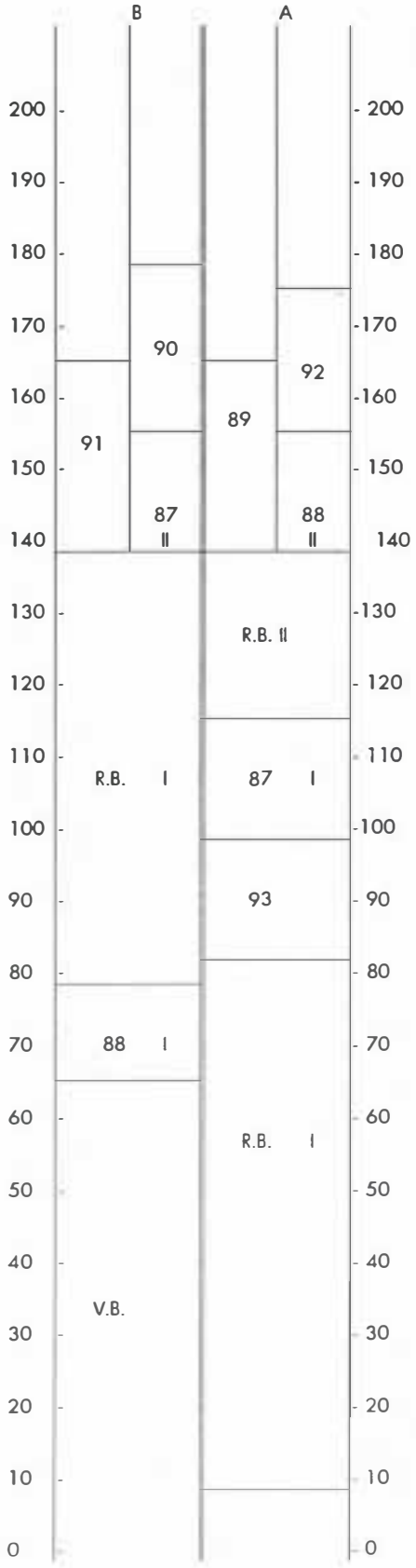
BLOCKS	20	20	20	22
Ref. block	20	20	20	20
PLANTING	1969	1969	1970	1970
CLONE	TR 1515	GT 1	GT 1	GT 1
Area (Ha)	5,34	19,66	64,18	28,70
Stand 1990	339	287	268	297
1991	170	183	198	185
1992				
Kg/Ha 1990	304	1560	1478	1451
1991	1525	1581	1609	1780
1992				
Kg/Tree 1990	0,9	5,4	5,5	4,9
1991	9,0	8,6	8,1	9,6
1992				
Tapping 1990	UTS	UTS	UTS	UTS
System 199	N	N	N	N
199	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N
Stim. g/tree	1	1	1	1
frequency	8/y	8/y	8/y	8/y
% Ethrel	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	400	400

Date of visit : 26/5/92
Name of the plantations : TANJUNG - MARIA
Block : 1 (associated block 2)
area : 61 ha
clone : GT1
date of planting : 1970
date of opening :



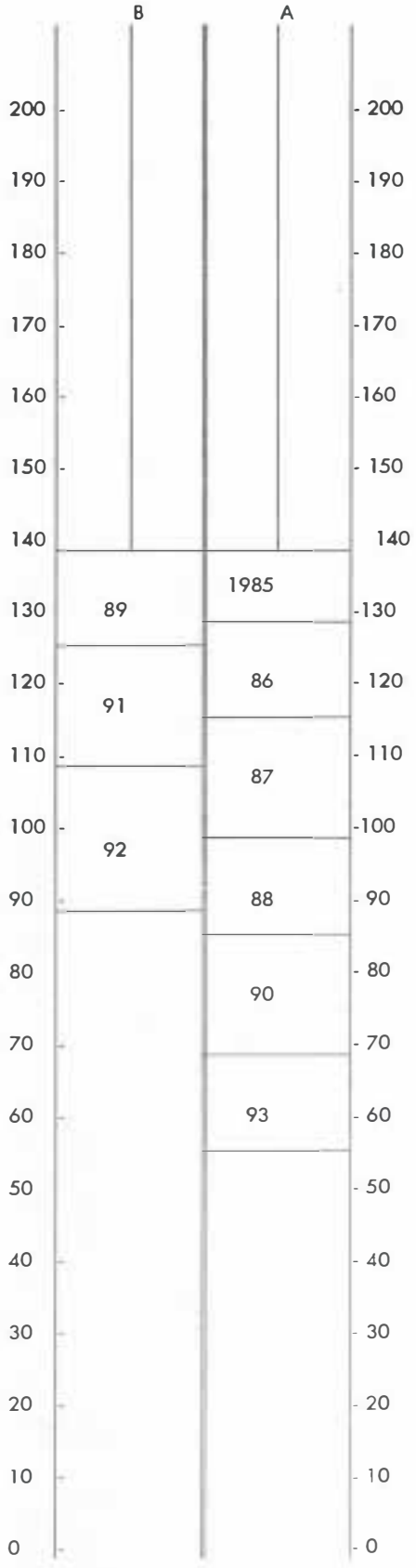
BLOCKS	01	02
Ref. block	1	1
PLANTING	1970	1971
CLONE	GT 1	GT 1
Area (Ha)	61,00	23,50
Stand 1990	346	346
1991	255	305
1992		
Kg/Ha 1990	1983	2125
1991	1615	1554
1992		
Kg/Tree 1990	5,7	6,2
1991	6,3	5,1
1992		
Tapping 1990	UTS	UTS
System 199	N	N
199	UTS	UTS
TS 1993	N	N
Stim. g/tree	1	1
frequency	8/y	8/y
% Ethrel	5.0%	5.0%
a.i./tree	400	400

Date of visit : 26/5/92
Name of the plantations : TANJUNG - MARIA
Block : 26 (associated block 25)
area : 84 ha
clone : GT 1
date of planting : 1971
date of opening :



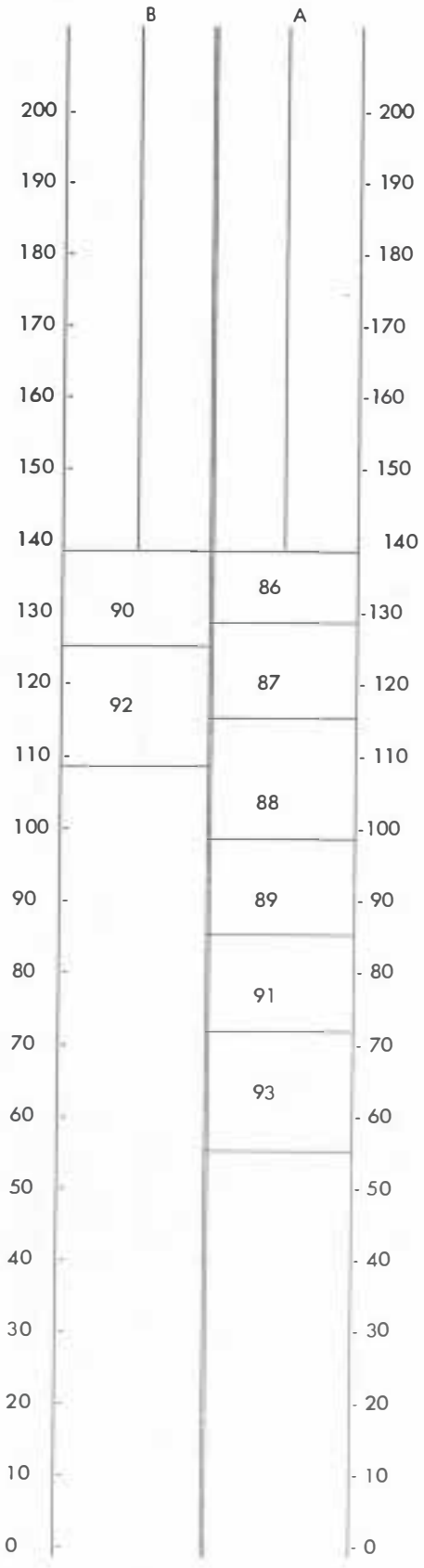
BLOCKS	25	26
Ref. block	26	26
PLANTING	1971	1971
CLONE	GT 1	GT 1
Area (Ha)	16,74	84,40
Stand 1990	276	302
1991	207	225
1992		
Kg/Ha 1990	2307	1788
1991	1634	1554
1992		
Kg/Tree 1990	8,4	5,9
1991	7,9	6,9
1992		
Tapping 1990	UTS	UTS
System 199	UTS	UTS
199	UTS	UTS
TS 1993	N	N
Stim. g/tree	1	1
frequency	8/y	8/y
% Ethrel	5.0%	5.0%
a.i./tree	400	400

Date of visit : 26/5/92
Name of the plantations : TANJUNG - MARIA
Block : 17 (associated blocks 13 - 18)
area : 60 ha
done : GT 1
date of planting : 1980
date of opening : 1985



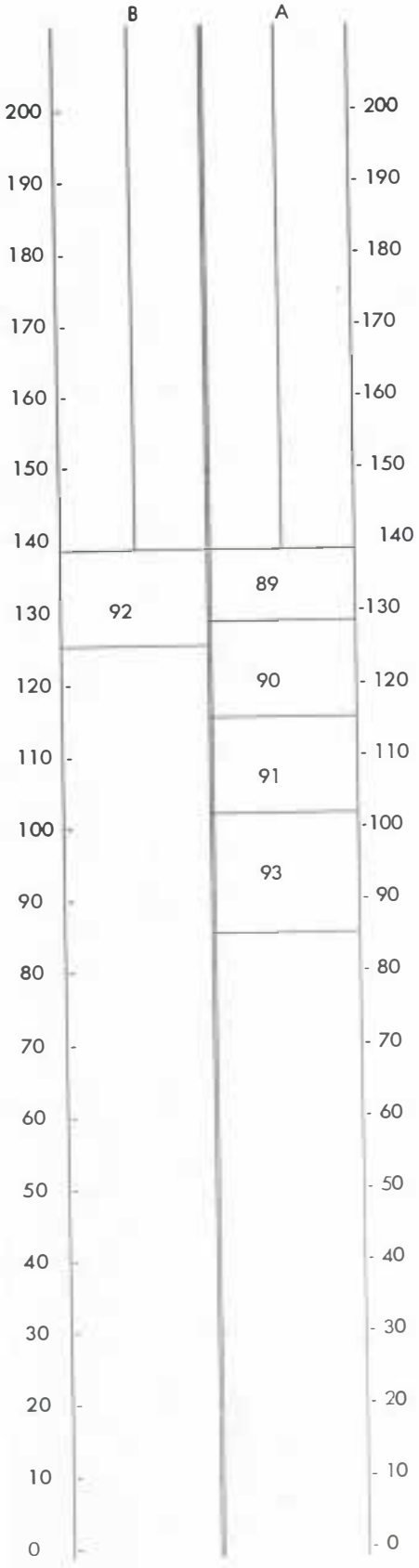
BLOCKS	13	17	18	18
Ref. block	17	17	17	17
PLANTING	1980	1980	1980	1980
CLONE	AV 2037	GT 1	GT 1	AV 2037
Area (Ha)	29,29	59,65	24,70	2,45
Stand 1990	385	378	415	416
1991	364	269	350	~~546~~
1992				
Kg/Ha 1990	1755	1415	1552	2115
1991	1762	1642	1603	1741
1992				
Kg/Tree 1990	4,6	3,7	3,7	5,1
1991	4,8	6,1	4,6	3,2
1992				
Tapping 1990	N	N	N	N
System 199	N	N	N	N
199	N	N	N	N
TS 1993	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8
frequency	12/y	10/y	10/y	12/y
% Ethrel	5.0%	5.0%	5.0%	5.0%
a.i./tree	480	400	400	480

Date of visit : 26/5/92
Name of the plantations : TANJUNG - MARIA
Block : 7
area : 22 ha
clone : GT 1
date of planting : 1981
date of opening : 1986



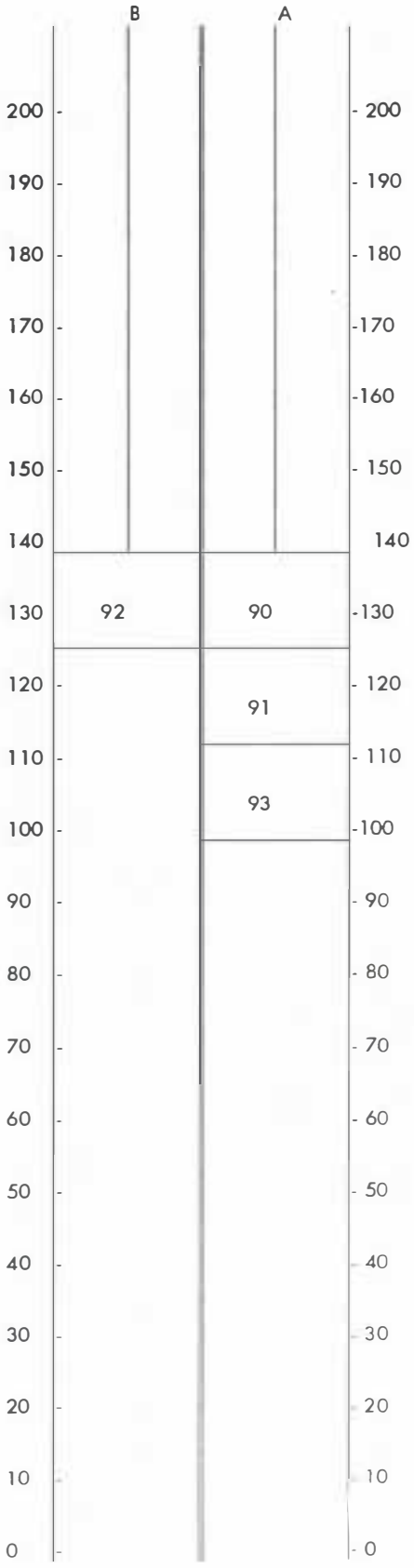
BLOCKS	07
Ref. block	7
PLANTING	1981
CLONE	GT 1
Area (Ha)	22,00
Stand 1990	382
1991	316
1992	
Kg/Ha 1990	1514
1991	1002
1992	
Kg/Tree 1990	4,0
1991	3,2
1992	
Tapping 1990	N
System 199	N
199	N
TS 1993	N
Stim. g/tree	0,8
frequency	10/y
% Ethrel	5.0%
a.i./tree	400

Date of visit : 26/5/92
Name of the plantations : TANJUNG - MARIA
Block : 5 (associated block 4)
area : PR 255 (7.2 ha) - PR 261 (9 ha) - GT 1 (29.9 ha) - PB 235 (24 ha) - PB 260 (23.5 ha)
clone : 94 ha
date of planting : 1984
date of opening : 1989



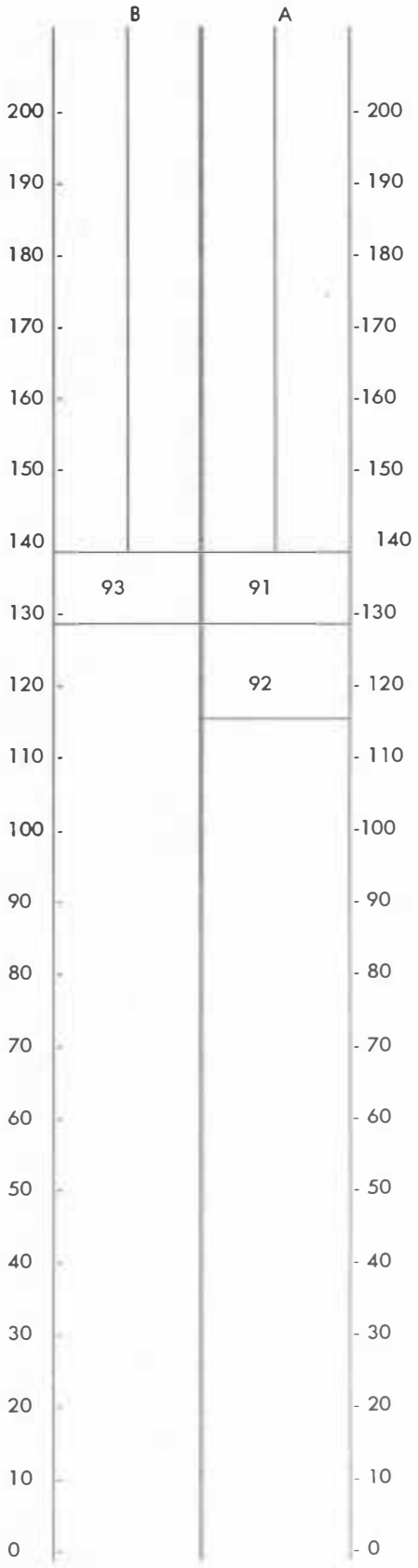
BLOCKS	04	05	05	05	05
Ref. block	5	5	5	5	5
PLANTING	1984	1984	1984	1984	1984
CLONE	PR 261	GT 1	PB 235	PR 255	PB 260
Area (Ha)	9,00	29,94	24,00	7,20	23,52
Stand 1990	258	244	300	247	353
1991	224	288	306	248	373
1992					
Kg/Ha 1990	456	814	1122	653	1227
1991	706	813	737	733	1325
1992					
Kg/Tree 1990	1,8	3,3	3,7	2,6	3,5
1991	3,2	2,8	2,4	3,0	3,6
1992					
Tapping 1990	N	N	N	N	N
System 199	N	N	N	N	N
199	N	N	N	N	N
TS 1993	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8
frequency	5/y	12/y	5/y	12/y	5/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	100	240	100	240	100

Date of visit : 26/5/92
Name of the plantations : TANJUNG MARIA
Block : 4 (associated bloc 7)
area : 45 ha
clone : PB 235 (36,06 ha) - PB 260 (9 ha)
date of planting : 1985
date of opening : 1990



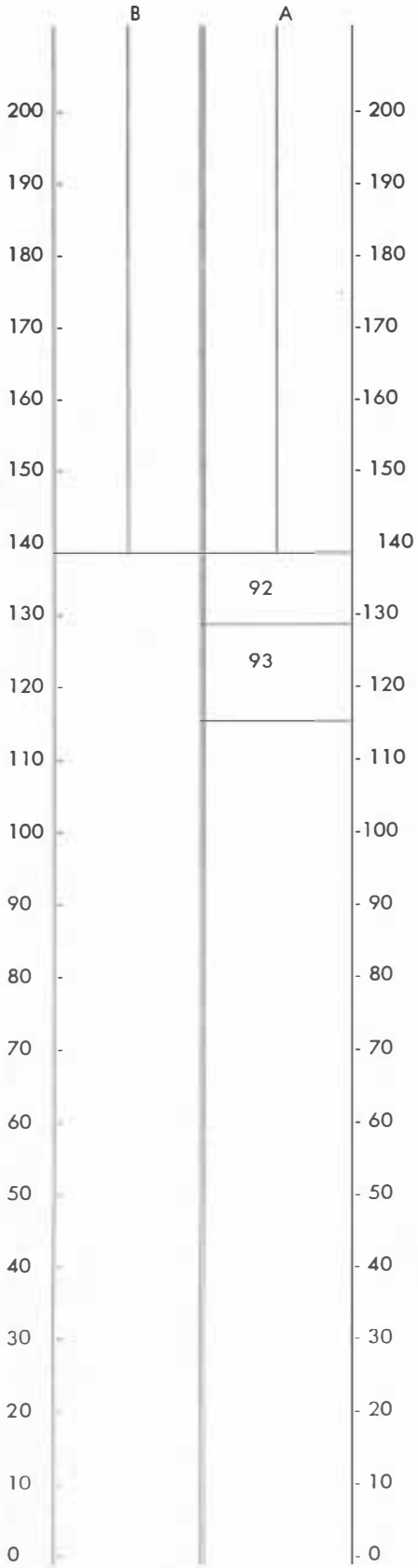
BLOCKS	03	04	04	07
Ref. block	4	4	4	4
PLANTING	1985	1985	1985	1985
CLONE	PB 235	PB 235	PB 260	PB 260
Area (Ha)	0,60	36,06	9,00	3,18
Stand 1990	0	399	464	195
1991	341	311	286	330
1992				
Kg/Ha 1990	0	846	456	675
1991	769	831	561	928
1992				
Kg/Tree 1990	0,0	2,1	1,0	3,5
1991	2,3	2,7	2,0	2,8
1992				
Tapping 1990	0	N	N	N
System 199	N	N	N	N
199	N	N	N	N
TS 1993	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8
frequency	5/y	5/y	5/y	5/y
% Ethrel	2.5%	2.5%	2.5%	2.5%
a.i./tree	100	100	100	100

Date of visit : 26/5/92
Name of the plantations : TANJUNG MARIA
Block : 3 (associated block 9-14)
area : PB 260 (7.5 ha) - PB 235 (67.59 ha)
clone : 75 ha
date of planting : 1986
date of opening : 1991



BLOCKS	03	03	09	14	14
Ref. block	3	3	3	3	3
PLANTING	1986	1986	1986	1986	1986
CLONE	PB 235	PB 260	PB 260	PB 260	PR 261
Area (Ha)	68,70	6,34	59,48	17,10	10,00
Stand 1990	0	0	0	0	0
1991	357	395	310	382	0
1992					
Kg/Ha 1990	0	0	0	0	0
1991	770	757	495	666	0
1992					
Kg/Tree 1990	0,0	0,0	0,0	0,0	0,0
1991	2,2	1,9	1,6	1,7	0,0
1992					
Tapping 1990	0	0	0	0	0
System 199	N	N	N	N	0
199	N	N	N	N	N
TS 1993	N	N	N	N	N
Stim. g/tree	0,7	0,7	0,7	0,7	0,7
frequency	4/y	4/y	4/y	4/y	4/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	70	70	70	70	70

Date of visit : 26/5/92
Name of the plantations : TANJUNG MARIA
Block : 8
area : 74 ha
clone : PB 235 = 53 ha - PR 261 = 21 ha
date of planting : 1987
date of opening : 1992



BLOCKS	08	08
Ref. block	8	8
PLANTING	1987	1987
CLONE	PR 261	PB 235
Area (Ha)	21,30	59,93
Stand 1990	0	0
1991	0	0
1992		
Kg/Ha 1990	0	0
1991	0	0
1992		
Kg/Tree 1990	0,0	0,0
1991	0,0	0,0
1992		
Tapping 1990	0	0
System 199	0	0
199	N	N
TS 1993	N	N
Stim. g/tree	0,7	0,7
frequency	4/y	4/y
% Ethrel	2.5%	2.5%
a.i./tree	70	70

TANAH BESIH

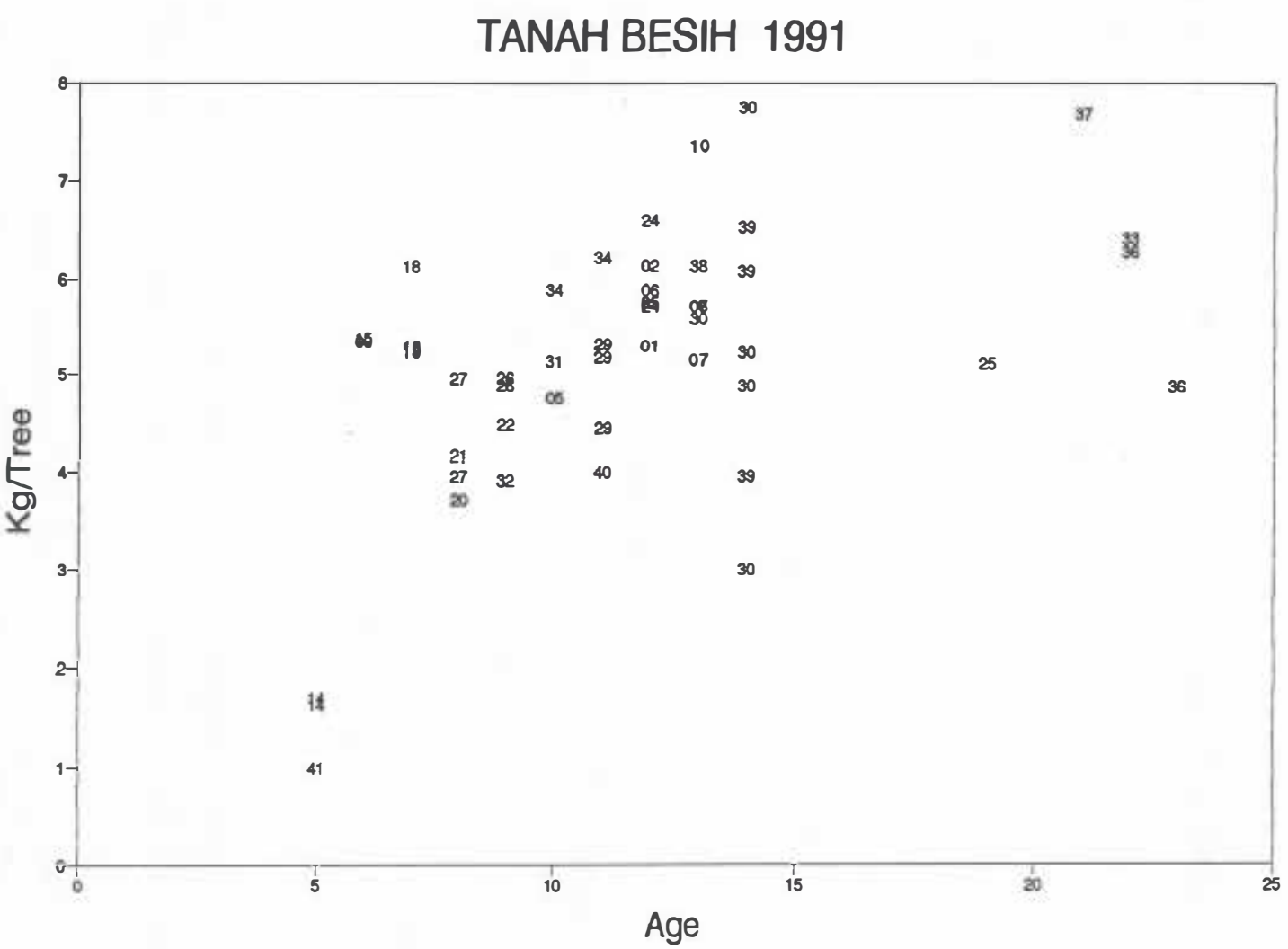
In block 21 (1983 planting), the foliage is sparse following a leaf disease attack.

Production was low in the following blocks (figure 7):

Nos. 20-21-27	: GT 1, 1983 (leaf diseases?)
No. 32	: GT 1, 1982
No. 40	: AVROS 2037, 1980, requires more intensive stimulation
No. 29	: PR 261
No. 30	: AVROS, 1977 (5 ha near village)
No. 39	: Trial
No. 36	: To be replanted

Production in block 24 (1 ha of AVROS, 1979) is particularly high.

FIGURE N° 7

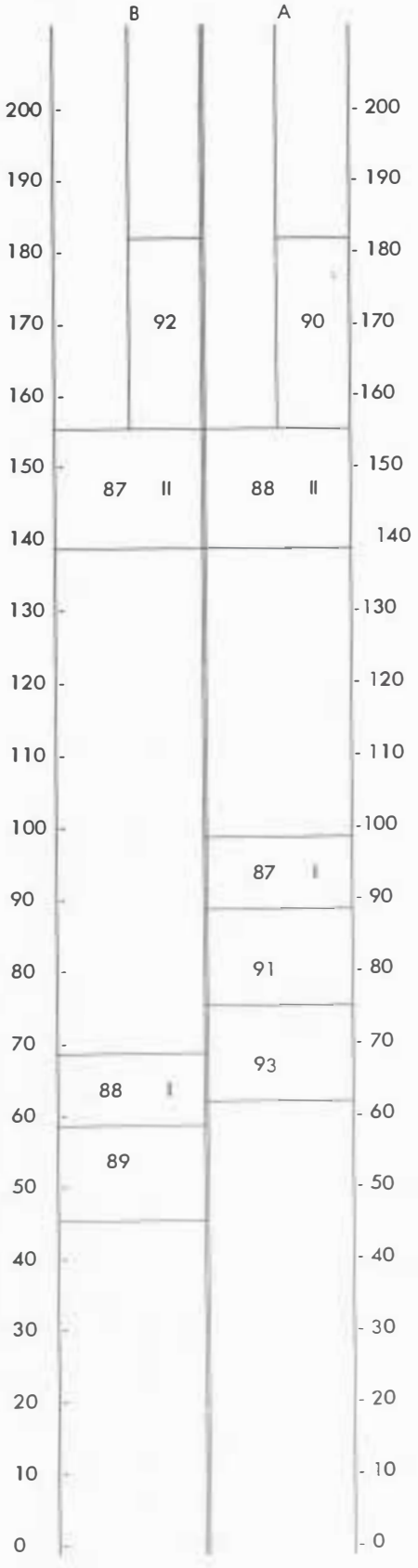


TANAH BESIH

BLOCK	Ref. block	Planting Year	CLONE	Area Ha	Tapping 1992	System 1993
01	2	1979	GT 1	24,02	N	N
02	2	1979	AV 2037	29,01	N	N
05	5	1981	AV 2037	31,28	N	N
06	2	1979	GT 1	31,03	N	N
07	10	1978	AV 2037	10,04	N	UTS
07	10	1978	GYT 577	12,32	N	UTS
08	10	1978	AV 2037	22,40	N	UTS
09	15	1985	PB 260	50,23	N	N
10	10	1978	GT 1	41,96	N	UTS
13	13	1987	PB 235	39,46	N	N
14	14	1986	PB 235	20,81	N	N
14	14	1986	PB 260	20,40	N	N
15	15	1985	PB 235	38,10	N	N
16	13	1987	PB 260	17,21	N	N
18	19	1984	PB 235	11,75	N	N
18	19	1984	PB 260	11,75	N	N
18	19	1984	PR 255	6,50	N	N
18	19	1984	PR 261	6,50	N	N
19	19	1984	PB 235	20,89	N	N
19	19	1984	PB 260	20,46	N	N
20	21	1983	GT 1	28,28	N	N
21	21	1983	GT 1	40,12	N	N
22	26	1982	GT 1	40,18	N	N
24	2	1979	AV 2037	1,02	N	N
24	2	1979	GYT 577	10,54	N	N
24	2	1979	PR 107	10,44	N	N
25	2	1972	GT 1	3,86	UTS	N
25	2	1979	GT 1	7,48	N	N

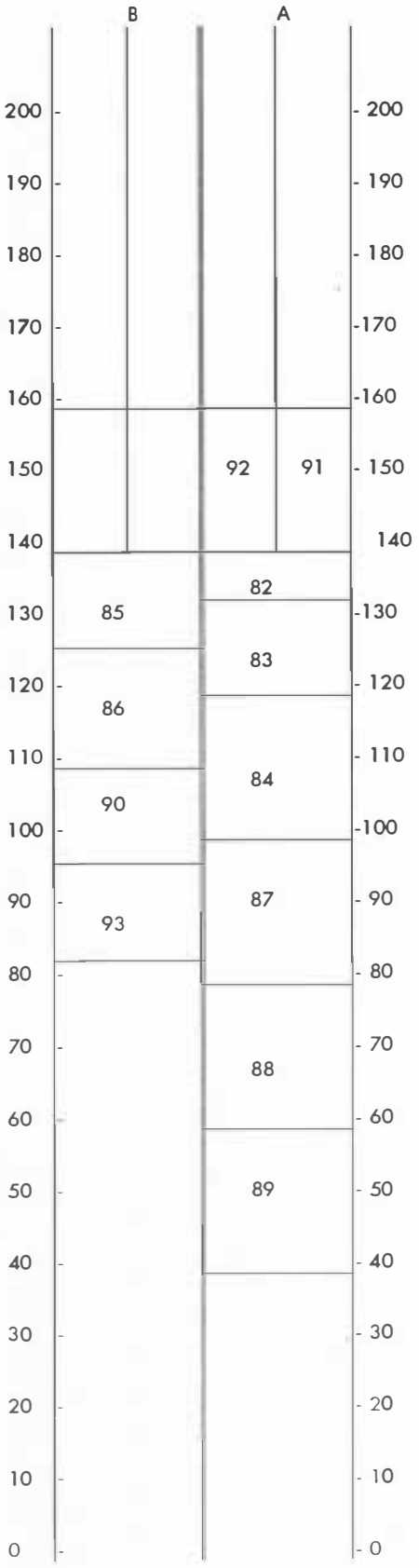
26	26	1982	AV 2037	25,00	N	N
26	26	1982	GT 1	13,54	N	N
27	21	1983	PR 255	20,50	N	N
27	21	1983	PR 261	20,00	N	N
29	34	1980	GT 1	8,41	N	N
29	34	1980	GYT 577	21,19	N	N
29	34	1980	PR 261	6,30	N	N
30	39	1977	AV 2037	5,32	UTS	N
30	39	1977	BPM 1	6,40	UTS	N
30	39	1977	RR 600	6,40	UTS	N
30	39	1977	RR 628	1,19	UTS	N
30	10	1978	GT 1	3,62	N	UTS
31	31	1981	GT 1	60,10	N	N
32	26	1982	GT 1	25,40	N	N
33	35	1969	GT 1	33,15	UTS	N
34	34	1980	GT 1	36,33	N	N
34	34	1981	GT 1	1,60	N	N
36	35	1968	GT 1	28,64	UTS	N
36	35	1969	AV 2037	13,10	UTS	N
37	35	1970	GT 1	36,55	UTS	N
38	10	1978	PR 107	20,79	N	UTS
39	39	1977	ex	7,86	UTS	N
39	39	1977	GT 1	34,89	UTS	N
39	39	1977	PR 107	15,60	UTS	N
40	34	1980	AV 2037	23,00	N	N
41	14	1986	PR 261	21,02	N	N

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 36 (associated blocks - 37 - 33)
area : 41 ha
clone : GT 1 = 28 ha - AV 2037 = 13 ha
date of planting : 1968/69
date of opening :



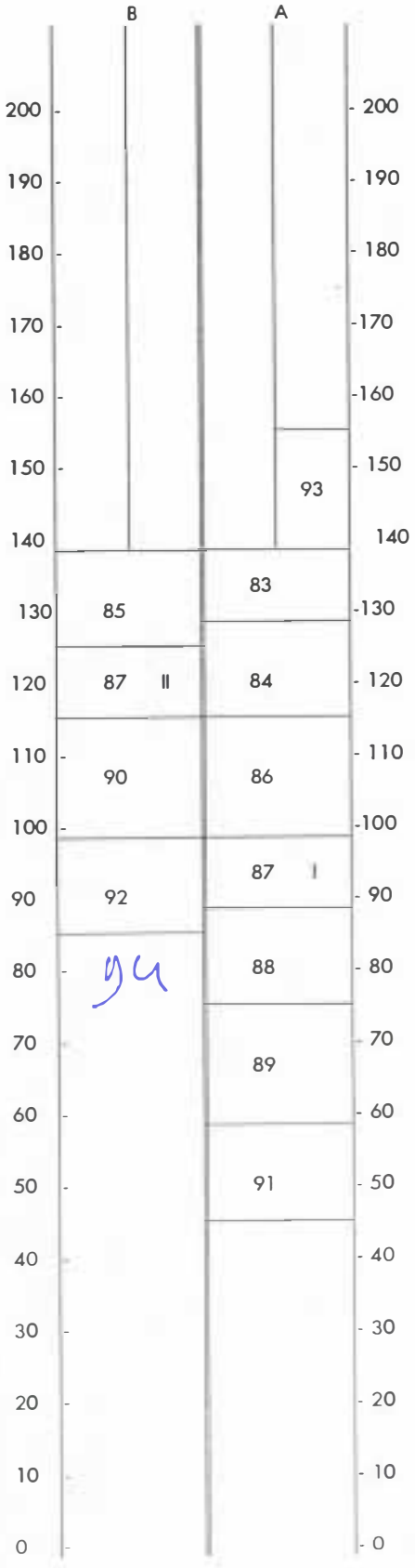
BLOCKS	36	33	36	37
Ref. block	35	35	35	35
PLANTING	1968	1969	1969	1970
CLONE	GT 1	GT 1	AV 2037	GT 1
Area (Ha)	28,64	33,15	13,10	36,55
Stand 1990	159	206	313	184
1991	172	198	318	166
1992				
Kg/Ha 1990	1138	1395	1762	1223
1991	835	1273	1992	1279
1992				
Kg/Tree 1990	7,2	6,8	5,6	6,6
1991	4,9	6,4	6,3	7,7
1992				
Tapping 1990	UTS	UTS	UTS	UTS
System 199	N	N	N	N
199	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N
Stim. g/tree	1	1	1	1
frequency	8/y	8/y	10/y	8/y
% Ethrel	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	500	400

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 39 (associated block : 30)
area : 58 ha
clone : GT 1 : 35 ha - PR 107 : 15ha - RISPA : 8 ha
date of planting : 1977
date of opening :



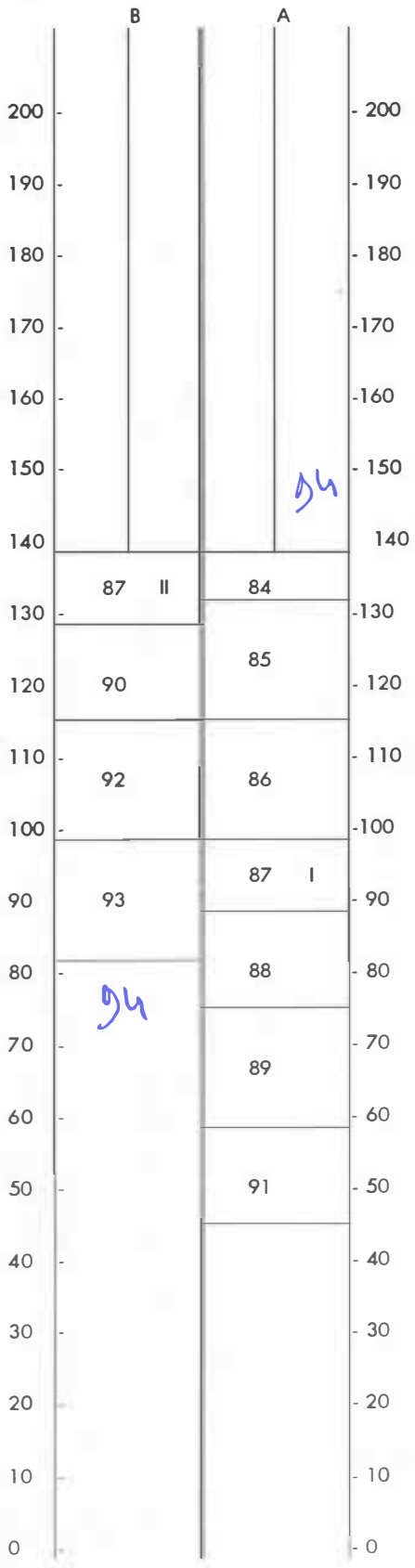
BLOCKS	30	30	30	30	39	39	39
Ref. block	39	39	39	39	39	39	39
PLANTING	1977	1977	1977	1977	1977	1977	1977
CLONE	BPM 1	RR 628	RR 600	AV 2037	GT 1	PR 107	ex
Area (Ha)	6,40	1,19	6,40	5,32	34,89	15,60	7,86
Stand 1990	340	370	325	529	334	347	370
1991	307	343	307	508	303	309	375
1992							
Kg/Ha 1990	1774	2253	2183	2930	2166	2155	2415
1991	2380	1795	1494	1519	1842	2015	1483
1992							
Kg/Tree 1990	5,2	6,1	6,7	5,5	6,5	6,2	6,5
1991	7,8	5,2	4,9	3,0	6,1	6,5	4,0
1992							
Tapping 1990	N	N	N	N	N	N	N
System 199	UTS	UTS	UTS	UTS	UTS	UTS	UTS
199	UTS	UTS	UTS	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8	
frequency	10/y	10/y	10/y	12/y	10/y	10/y	
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
a.i./tree	400	400	400	480	400	400	

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 10 (associated blocks : 7 - 8 - 30 - 38)
area : 43.5 ha
clone : GT 1
date of planting : 1978
date of opening : 1983



BLOCKS	07	07	08	10	30	38
Ref. block	10	10	10	10	10	10
PLANTING	1978	1978	1978	1978	1978	1978
CLONE	GYT 57	AV 2037	AV 2037	GT 1	GT 1	PR 107
Area (Ha)	12,32	10,04	22,40	41,96	3,62	20,79
Stand 1990	370	379	345	353	280	308
1991	362	375	339	280	272	306
1992						
Kg/Ha 1990	1890	1978	1870	2621	1393	1836
1991	1860	2144	1941	2062	1520	1877
1992						
Kg/Tree 1990	5,1	5,2	5,4	7,4	5,0	6,0
1991	5,1	5,7	5,7	7,4	5,6	6,1
1992						
Tapping 1990	N	N	N	N	N	N
System 199	N	N	N	N	N	N
199	N	N	N	N	N	N
TS 1993	UTS	UTS	UTS	UTS	UTS	UTS
Stim. g/tree	0,4	0,4	0,4	0,4	0,4	0,4
frequency	13/y	15/y	15/y	13/y	13/y	13/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	260	300	300	260	260	260

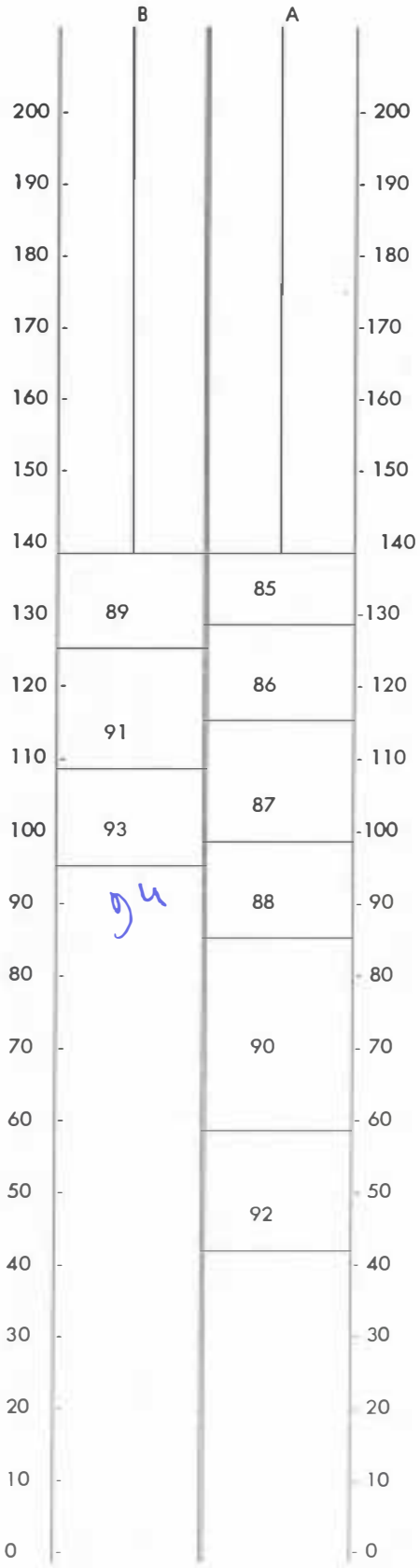
Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 2 (associated blocks : 6 - 1 - 24 - 25)
area : 30.5 ha
done : AVROS 2037
date of planting : 1979
date of opening : 1984



BLOCKS	25	01	02	06
Ref. block	2	2	2	2
PLANTING	1972	1979	1979	1979
CLONE	GT 1	GT 1	AV 2037	GT 1
Area (Ha)	3,86	24,02	29,01	31,03
Stand 1990	234	389	313	319
1991	236	384	310	315
1992				
Kg/Ha 1990	1638	2650	1864	2405
1991	1205	2031	1900	1853
1992				
Kg/Tree 1990	7,0	6,8	6,0	7,5
1991	5,1	5,3	6,1	5,9
1992				
Tapping 1990	N	N	N	N
System 199	N	N	N	N
199	UTS	N	N	N
TS 1993	N	N	N	N
Stim. g/tree	1	0,8	0,8	0,8
frequency	8/y	10/y	12/y	10/y
% Ethrel	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	480	400

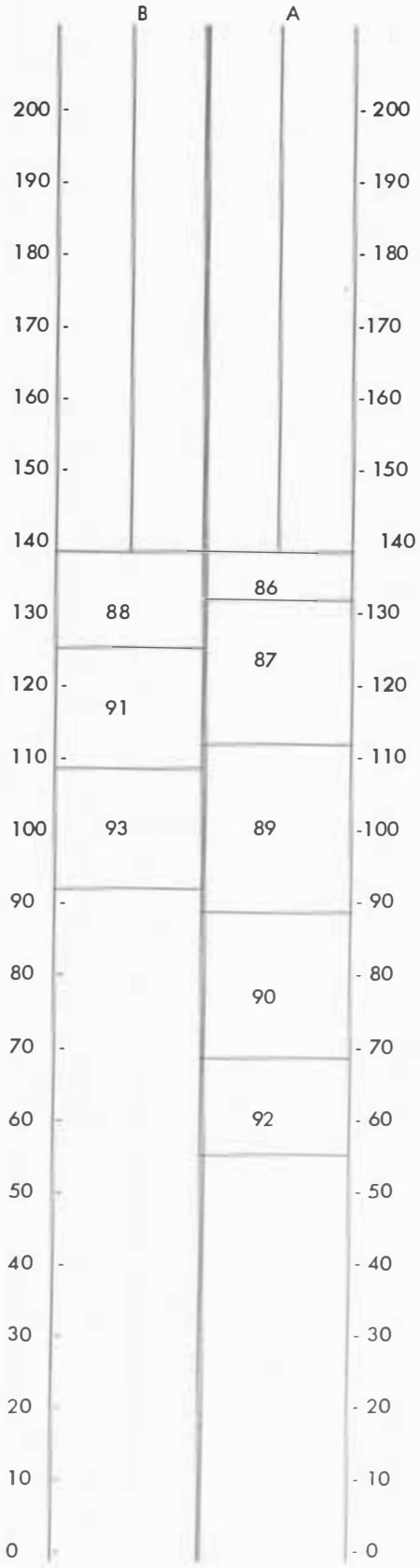
BLOCKS	24	24	24	25
Ref. block	2	2	2	2
PLANTING	1979	1979	1979	1979
CLONE	PR 107	AV 2037	GYT 57	GT 1
Area (Ha)	10,44	1,02	10,54	7,48
Stand 1990	198	216	223	357
1991	218	243	213	364
1992				
Kg/Ha 1990	1039	2341	1118	1766
1991	1246	2919	1404	2096
1992				
Kg/Tree 1990	5,2	10,9	5,0	4,9
1991	5,7	12,0	6,6	5,8
1992				
Tapping 1990	N	N	N	N
System 199	N	N	N	N
199	N	N	N	N
TS 1993	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8
frequency	10/y	12/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	480	400	400

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 34 (associated blocks : 29 - 40)
area : 39 ha
done : GT 1
date of planting : 1980
date of opening : 1985



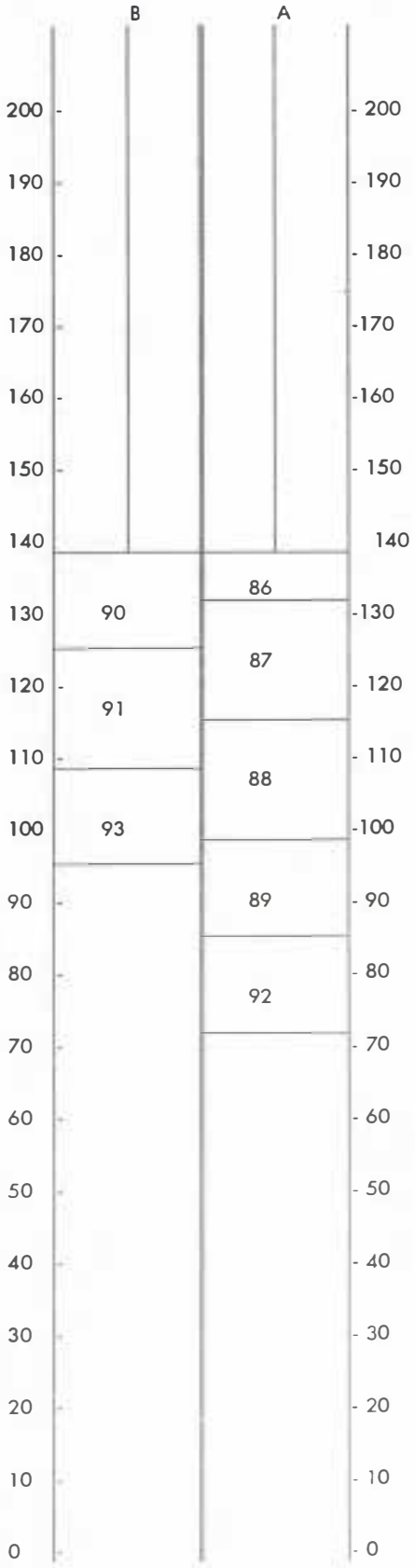
BLOCKS	29	29	29	34	40	34
Ref. block	34	34	34	34	34	34
PLANTING	1980	1980	1980	1980	1980	1981
CLONE	PR 261	GYT 57	GT 1	GT 1	AV 2037	GT 1
Area (Ha)	6,30	21,19	8,41	36,33	23,00	1,60
Stand 1990	315	204	350	334	280	331
1991	309	354	346	310	270	310
1992						
Kg/Ha 1990	1523	1553	1691	1667	1125	1703
1991	1366	1880	1790	1924	1078	1823
1992						
Kg/Tree 1990	4,8	7,6	4,8	5,0	4,0	5,1
1991	4,4	5,3	5,2	6,2	4,0	5,9
1992						
Tapping 1990	N	N	N	N	N	N
System 199	N	N	N	N	N	N
199	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8
frequency	6/y	10/y	10/y	10/y	12/y	10/y
% Ethrel	2.5%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	120	400	400	400	480	400

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 31
area : 60 ha
clone : GT 1
date of planting : 1981
date of opening : 1986



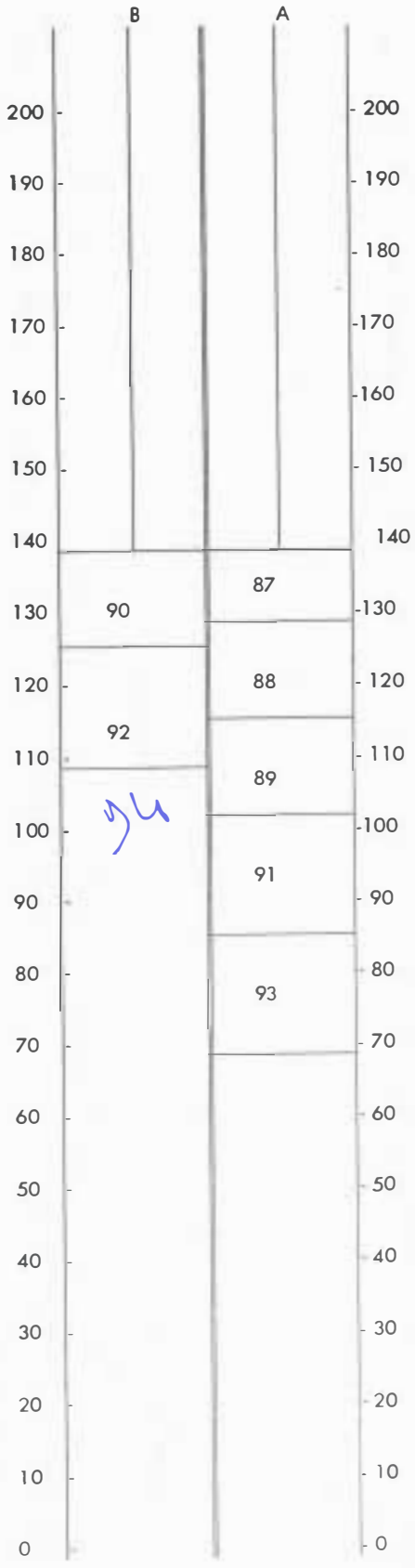
BLOCKS	31
Ref. block	31
PLANTING	1981
CLONE	GT 1
Area (Ha)	60,10
Stand 1990	308
1991	305
1992	
Kg/Ha 1990	1321
1991	1564
1992	
Kg/Tree 1990	4,3
1991	5,1
1992	
Tapping 1990	N
System 199	N
199	N
TS 1993	N
Stim. g/tree	0,8
frequency	10/y
% Ethrel	5.0%
a.i./tree	400

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 5
area : 31 ha
done : AVROS 2037
date of planting : 1981
date of opening : 1986



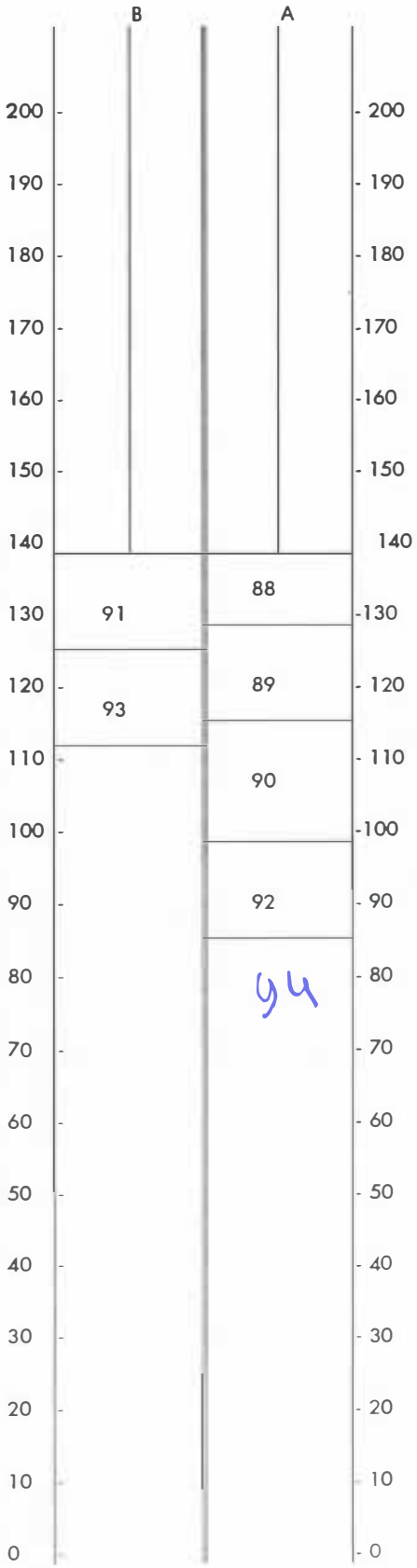
BLOCKS	05
Ref. block	5
PLANTING	1981
CLONE	AV 2037
Area (Ha)	31,28
Stand 1990	343
1991	338
1992	
Kg/Ha 1990	1352
1991	1605
1992	
Kg/Tree 1990	3,9
1991	4,7
1992	
Tapping 1990	N
System 199	N
199	N
TS 1993	N
Stim. g/tree	0,8
frequency	12/y
% Ethrel	5.0%
a.i./tree	480

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 26 (associated blocks : 22 - 32)
area : 38.5 ha
clone : GT 1 : 13.5 ha - AVROS 2037 : 25 ha
date of planting : 1982
date of opening : 1987



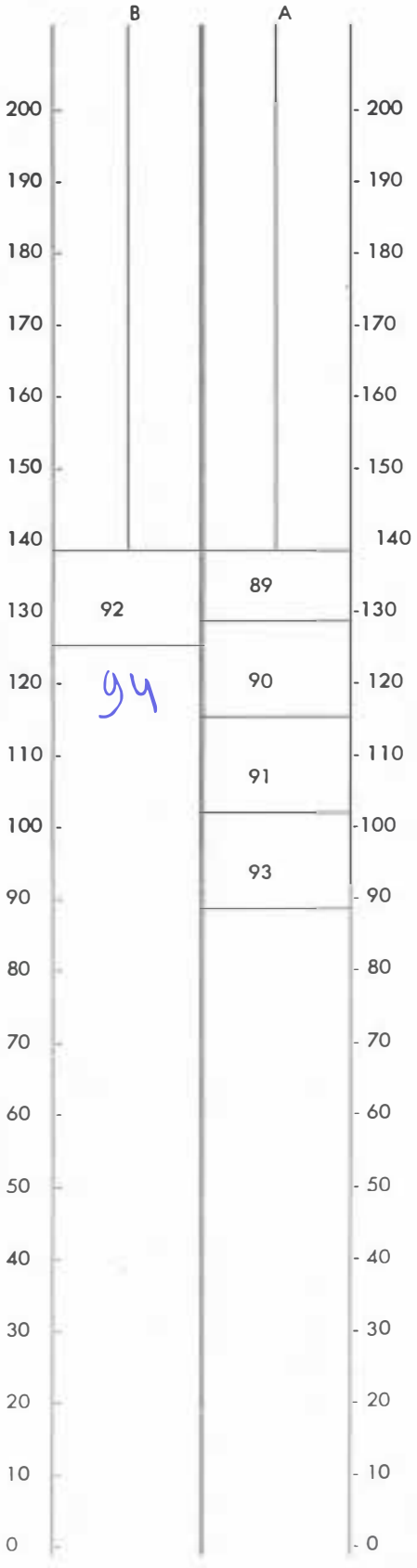
BLOCKS	22	26	26	32
Ref. block	26	26	26	26
PLANTING	1982	1982	1982	1982
CLONE	GT 1	AV 2037	GT 1	GT 1
Area (Ha)	40,18	25,00	13,54	25,40
Stand 1990	372	344	331	341
1991	369	351	313	359
1992				
Kg/Ha 1990	1484	1378	1584	1217
1991	1647	1740	1525	1403
1992				
Kg/Tree 1990	4,0	4,0	4,8	3,6
1991	4,5	5,0	4,9	3,9
1992				
Tapping 1990	N	N	N	N
System 199	N	N	N	N
199	N	N	N	N
TS 1993	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8
frequency	10/y	12/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	480	400	400

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 21 (associated blocks : 20 - 27)
area : 40 ha
clone : GT 1
date of planting : 1983
date of opening : 1988



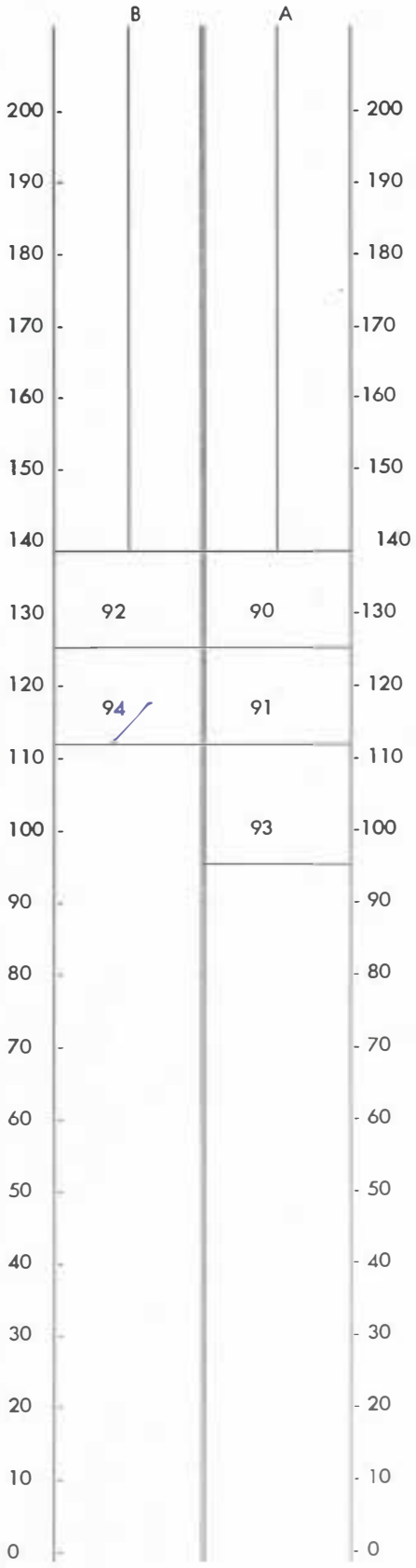
BLOCKS	20	21	27	27
Ref. block	21	21	21	21
PLANTING	1983	1983	1983	1983
CLONE	GT 1	GT 1	PR 255	PR 261
Area (Ha)	28,28	40,12	20,50	20,00
Stand 1990	333	343	305	282
1991	361	329	282	299
1992				
Kg/Ha 1990	1060	1091	912	1080
1991	1338	1361	1392	1180
1992				
Kg/Tree 1990	3,2	3,2	3,0	3,8
1991	3,7	4,1	4,9	3,9
1992				
Tapping 1990	N	N	N	N
System 199	N	N	N	N
199	N	N	N	N
TS 1993	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8
frequency	12/y	12/y	12/y	5/y
% Ethrel	2.5%	2.5%	2.5%	2.5%
a.i./tree	240	240	240	100

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 19 (associated block 18)
area : 41
done : PB 235 - 260
date of planting : 1984
date of opening : July 1989



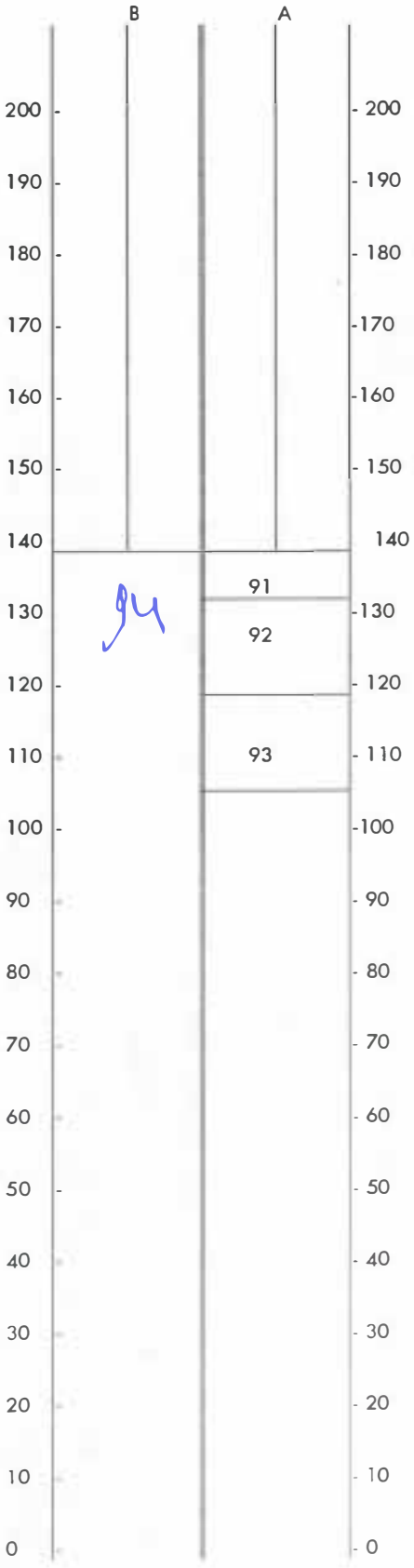
BLOCKS	18	18	18	18	19	19
Ref. block	19	19	19	19	19	19
PLANTING	1984	1984	1984	1984	1984	1984
CLONE	PR 255	PR 261	PB 235	PB 260	PB 235	PB 260
Area (Ha)	6,50	6,50	11,75	11,75	20,89	20,46
Stand 1990	402	317	347	347	318	318
1991	320	319	341	341	343	343
1992						
Kg/Ha 1990	1755	1095	1465	1465	1307	1307
1991	1958	1680	1803	1803	1795	1795
1992						
Kg/Tree 1990	4,4	3,5	4,2	4,2	4,1	4,1
1991	6,1	5,3	5,3	5,3	5,2	5,2
1992						
Tapping 1990	N	N	N	N	N	N
System 199	N	N	N	N	N	N
199	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8
frequency	12/y	5/y	5/y	5/y	5/y	5/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	240	100	100	100	100	100

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 15 (associated block 9)
area : 38 ha
clone : PB 235
date of planting : 1985
date of opening : 1/90



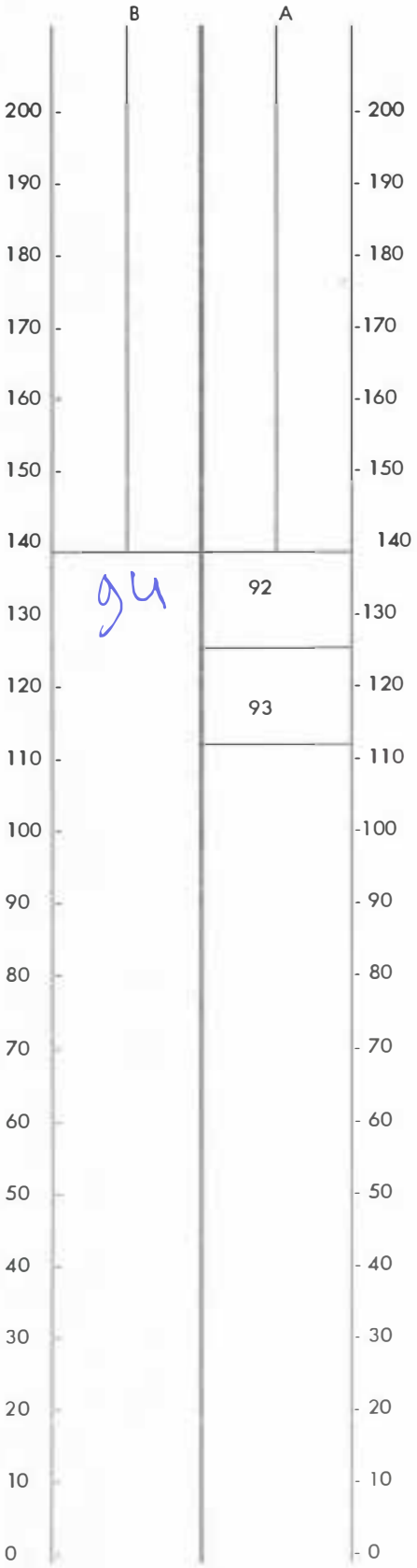
BLOCKS	09	15
Ref. block	15	15
PLANTING	1985	1985
CLONE	PB 260	PB 235
Area (Ha)	50,23	38,10
Stand 1990	32	375
1991	314	282
1992		
Kg/Ha 1990	794	989
1991	1679	1511
1992		
Kg/Tree 1990	25,2	2,6
1991	5,3	5,4
1992		
Tapping 1990	N	N
System 199	N	N
199	N	N
TS 1993	N	N
Stim. g/tree	0,8	0,8
frequency	5/y	5/y
% Ethrel	2.5%	2.5%
a.i./tree	100	100

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 14 (associated block 41)
area : 41 ha
clone : PB 235 = 21 ha - PB 260 = 20 ha
date of planting : 1986
date of opening : 1991



BLOCKS	14	14	41
Ref. block	14	14	14
PLANTING	1986	1986	1986
CLONE	PB 260	PB 235	PR 261
Area (Ha)	20,40	20,81	21,02
Stand 1990	0	0	0
1991	364	260	394
1992			
Kg/Ha 1990	0	0	0
1991	614	420	387
1992			
Kg/Tree 1990	0,0	0,0	0,0
1991	1,7	1,6	1,0
1992			
Tapping 1990	0	0	0
System 199	N	N	N
199	N	N	N
TS 1993	N	N	N
Stim. g/tree	0,7	0,7	0,7
frequency	4/y	4/y	4/y
% Ethrel	2.5%	2.5%	2.5%
a.i./tree	70	70	70

Date of visit : 25/5/92
Name of the plantations : TANAH - BESIH
Block : 13 (associated block 16)
area : 39 ha
clone : PB 235
date of planting : 1987
date of opening : 1992



BLOCKS	13	16
Ref. block	13	13
PLANTING	1987	1987
CLONE	PB 235	PB 260
Area (Ha)	39,46	17,21
Stand 1990	0	0
1991	0	0
1992		
Kg/Ha 1990	0	0
1991	0	0
1992		
Kg/Tree 1990	0,0	0,0
1991	0,0	0,0
1992		
Tapping 1990	0	0
System 199	0	0
199	N	N
TS 1993	N	N
Stim. g/tree	0,7	0,7
frequency	4/y	4/y
% Ethrel	2.5%	2.5%
a.i./tree	70	70

LIMA PULUH

Figure 8 reveals low production in the following blocks:

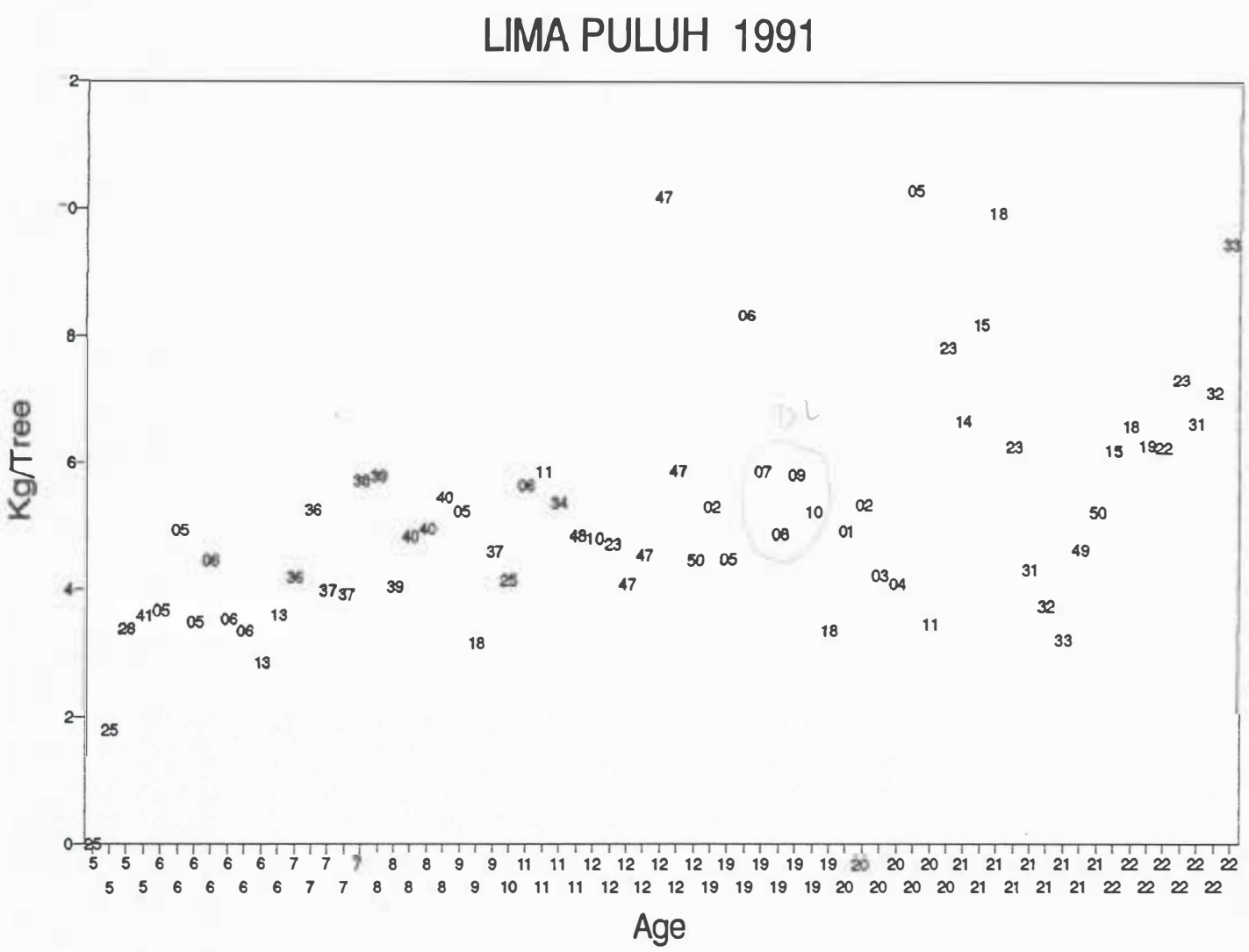
No. 18 : GT 1, 1972
Nos. 3–4 & 11: Lidah Tanah bottomlands, tapped on high panels for the 3rd consecutive year
Nos. 31–32–33, 49 & 50: GT 1 tapped on low panels.

For the young plantings

No. 18: GT 1, 1982
No. 47: PR 107, 1979, requires more intensive stimulation

Production in block 47 (1 ha of PB 5/51) should be reviewed, as it is too high.

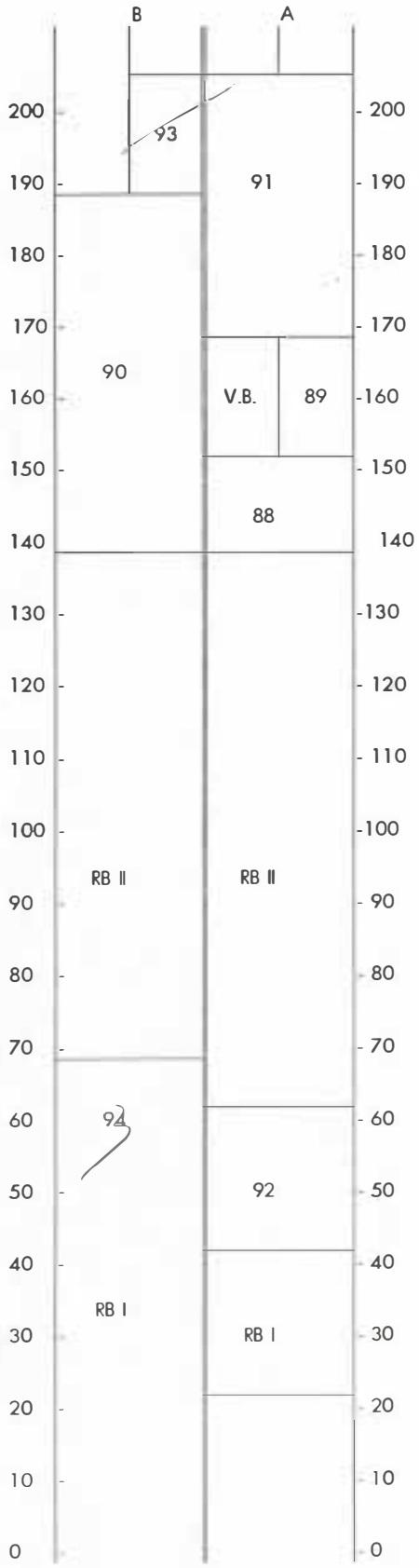
FIGURE N° 8



BLOCK	Ref. block	Planting Year	CLONE	Area Ha	Tapping 1992	System 1993
01	1	1971	AV 2037	24,90	UTS	N
02	1	1971	AV 2037	21,00	UTS	N
02	7	1972	AV 2037	1,40	UTS	N
03	1	1971	AV 2037	12,90	UTS	N
04	11	1971	GT 1	12,50	UTS	N
05	1	1971	AV 2037	2,30	UTS	N
05	7	1972	AV 2037	11,82	UTS	N
05	5	1982	GT 1	17,60	N	N
05	6	1985	PB 235	10,65	N	N
05	6	1985	PB 260	24,56	N	N
05	6	1985	PR 255	10,57	N	N
06	7	1972	AV 2037	9,45	UTS	N
06	48	1980	GT 1	12,40	N	N
06	6	1985	BPM 24	6,79	N	N
06	6	1985	PB 235	3,65	N	N
06	6	1985	PR 261	24,10	N	N
07	7	1972	GT 1	20,10	UTS	N
08	7	1972	AV 2037	13,90	UTS	N
09	7	1972	GT 1	20,70	UTS	N
10	7	1972	AV 2037	14,80	UTS	N
10	10	1979	GT 1	37,30	N	N
11	11	1971	GT 1	25,30	UTS	N
11	11	1980	AV 2037	24,80	N	UTS
13	6	1985	PB 235	19,24	N	N
13	6	1985	SP	18,00	N	N
14	50	1970	GT 1	43,30	UTS	N
15	22	1969	GT 1	15,20	UTS	N
15	50	1970	GT 1	1,00	UTS	N
18	22	1969	GT 1	23,30	UTS	N
18	50	1970	GT 1	7,64	UTS	N
18	50	1972	GT 1	6,20	UTS	N
18	5	1982	GT 1	16,60	N	N

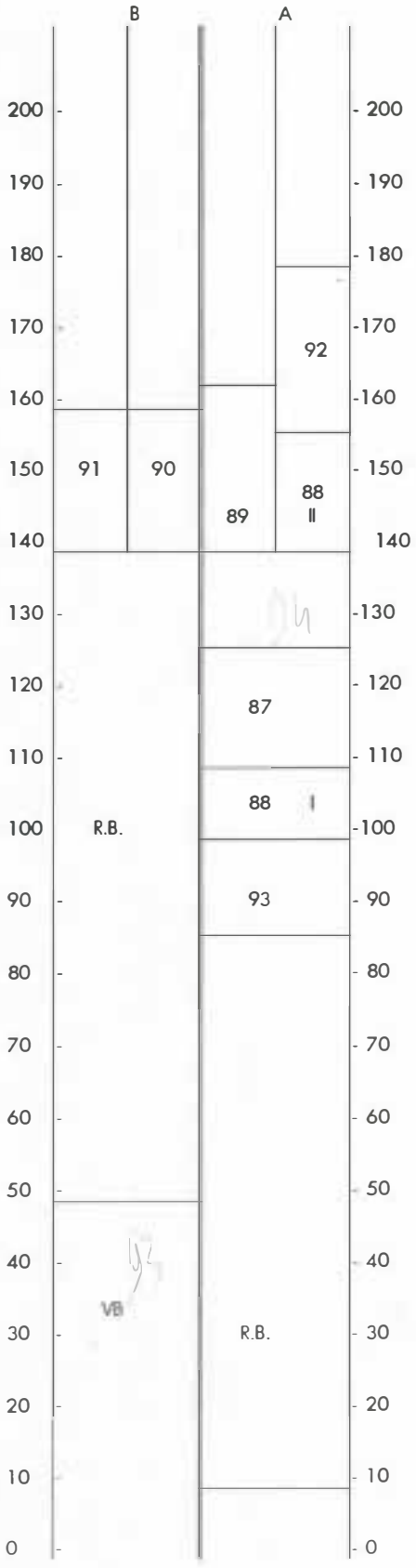
19	22	1969	GT 1	17,40	UTS	N
22	22	1969	GT 1	28,95	UTS	N
23	22	1969	GT 1	19,60	UTS	N
23	23	1970	GT 1	19,94	UTS	N
23	23	1971	GT 1	0,80	UTS	N
23	10	1979	GT 1	20,10	N	N
25	25	1981	GT 1	3,40	N	N
25	28	1986	PR 261	23,36	N	N
25	28	1986	RR 712	10,41	N	N
25	28	1986	TM 8	9,78	N	N
28	28	1986	PB 260	40,20	N	N
31	50	1969	GT 1	35,45	UTS	N
31	50	1970	GT 1	5,20	UTS	N
32	50	1969	GT 1	25,70	UTS	N
32	50	1970	GT 1	1,58	UTS	N
33	50	1969	GT 1	73,50	UTS	N
33	50	1970	GT 1	10,49	UTS	N
34	34	1980	GT 1	11,65	N	N
35	38	1964	GT 1	19,40	N	UTS
36	36	1984	PB 235	26,89	N	N
36	36	1984	PB 260	29,86	N	N
37	5	1982	AV 2037	31,60	N	N
37	36	1984	PB 235	8,39	N	N
37	36	1984	PR 255	9,60	N	N
38	38	1964	GT 1	24,70	N	UTS
38	36	1984	PB 235	9,70	N	N
39	39	1983	PB 235	20,83	N	N
39	39	1983	PB 260	22,57	N	N
40	40	1983	PB 5/51	10,36	N	N
40	40	1983	PR 255	23,88	N	N
40	40	1983	PR 261	10,81	N	N
41	28	1986	PB 235	44,10	N	N
42	42	1987	PB 235	52,79	N	N
42	42	1987	RR 712	7,78	N	N
47	10	1979	AV 2037	18,30	N	N
47	10	1979	GT 1	21,49	N	N
47	10	1979	PB 5/51	1,33	N	N
47	10	1979	PR 107	18,54	N	N
48	48	1980	GT 1	31,15	N	N
49	50	1970	GT 1	31,60	UTS	N
50	50	1970	GT 1	23,40	UTS	N
50	10	1979	GT 1	7,36	N	N

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 38 (associated block 35)
area : 25 ha
clone : GT 1
date of plantin 1964
date of opening :



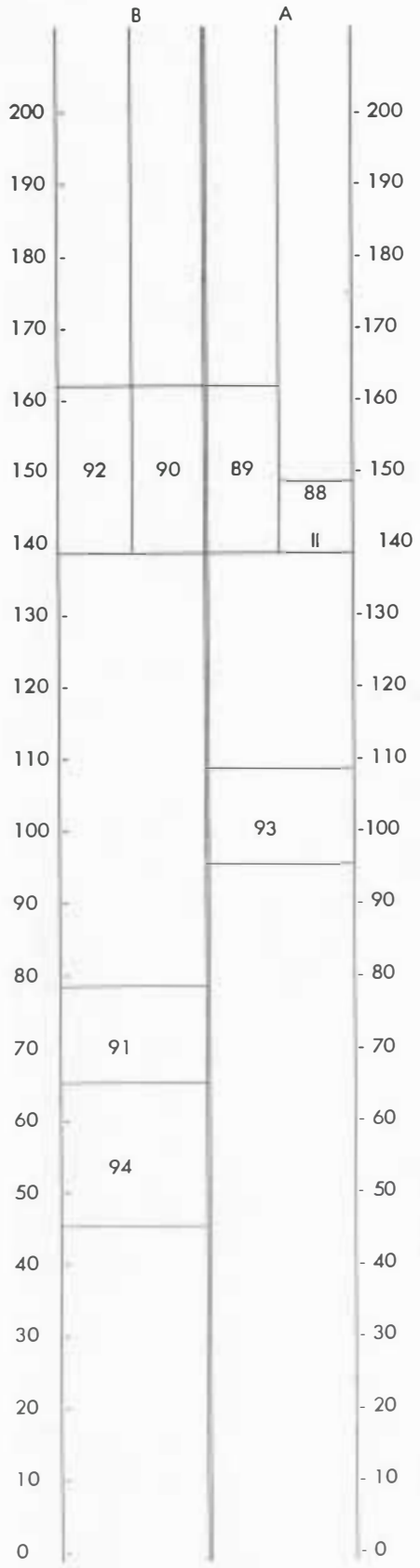
BLOCKS	35	38
Ref. block	38	38
PLANTING	1964	1964
CLONE	GT 1	GT 1
Area (Ha)	19,40	24,70
Stand 1990	242	217
1991	231	200
1992		
Kg/Ha 1990	4223	3060
1991	2733	1961
1992		
Kg/Tree 1990	17,5	14,1
1991	11,8	9,8
1992		
Tapping 1990	3	3
System 199	3	3
199	N	N
TS 1993	UTS	UTS
Stim. g/tree	0,5	0,5
frequency	13/y	13/y
% Ethrel	5.0%	5.0%
a.i./tree	325	325

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 22 (associated blocks 15-18-19-23)
area : 28 ha
clone : GT 1
date of planting : 1969
date of opening :



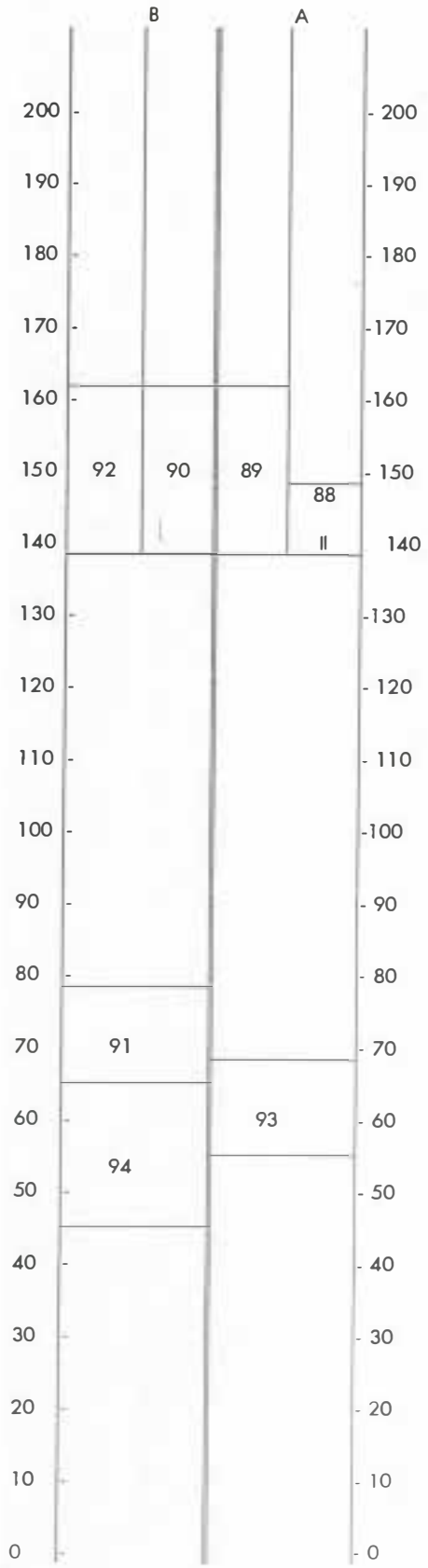
BLOCKS	15	18	19	22	23
Ref. block	22	22	22	22	22
PLANTING	1969	1969	1969	1969	1969
CLONE	GT 1	GT 1	GT 1	GT 1	GT 1
Area (Ha)	15,20	23,30	17,40	28,95	19,60
Stand 1990	222	186	265	206	241
1991	203	150	236	182	240
1992					
Kg/Ha 1990	1506	1320	1874	1489	1669
1991	1246	979	1468	1129	1749
1992					
Kg/Tree 1990	6,8	7,1	7,1	7,2	6,9
1991	6,1	6,5	6,2	6,2	7,3
1992					
Tapping 1990	UTS	UTS	UTS	UTS	UTS
System 199	UTS	UTS	UTS	UTS	UTS
199	UTS	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N	N
Stim. g/tree	1	1	1	1	1
frequency	8/y	8/y	8/y	8/y	8/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	400	400	400

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 23
area : 20 Ha
clone : GT 1
date of planting : 1970
date of opening :



BLOCKS	23	23
Ref. block	23	23
PLANTING	1970	1971
CLONE	GT 1	GT 1
Area (Ha)	19,94	0,80
Stand 1990	248	248
1991	239	240
1992		
Kg/Ha 1990	1877	730
1991	1483	1875
1992		
Kg/Tree 1990	7,6	2,9
1991	6,2	7,8
1992		
Tapping 1990	UTS	UTS
System 199	N	N
199	UTS	UTS
TS 1993	N	N
Stim. g/tree	1	1
frequency	8/y	8/y
% Ethrel	5.0%	5.0%
a.i./tree	400	400

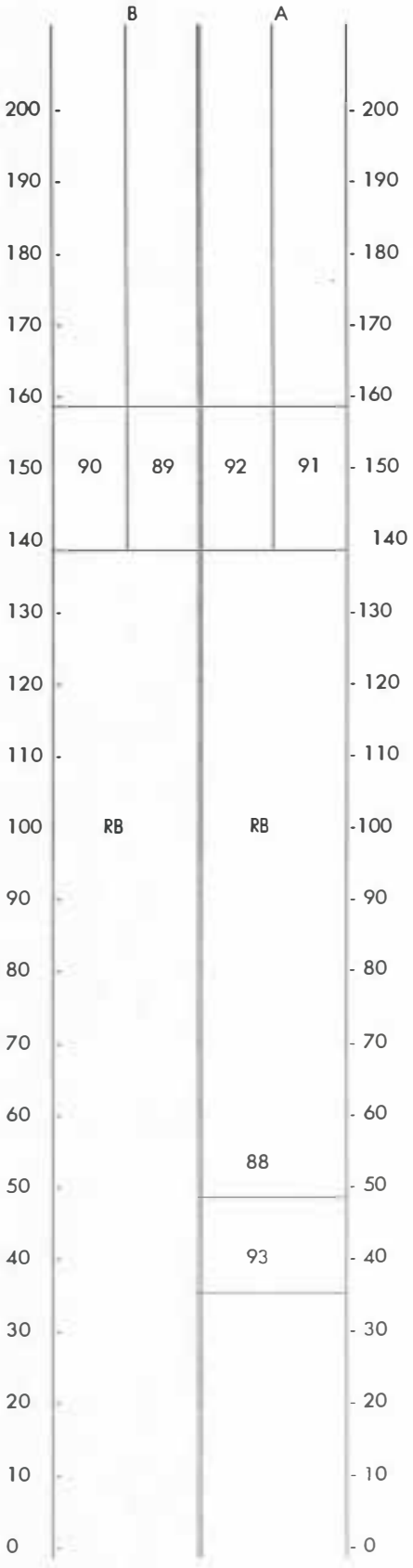
Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 50 (associated blocks 14-15-18-31-32-33-49)
area : 23 ha
clone : GT 1
date of planting : 1970
date of opening :



BLOCKS	31	32	33	14	15	18
Ref. block	50	50	50	50	50	50
PLANTING	1969	1969	1969	1970	1970	1970
CLONE	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1
Area (Ha)	35,45	25,70	73,50	43,30	1,00	7,64
Stand 1990	186	190	112	212	281	191
1991	161	174	112	194	203	150
1992						
Kg/Ha 1990	1490	1307	1057	1515	1273	1867
1991	1057	1229	1064	1285	1657	1489
1992						
Kg/Tree 1990	8,0	6,9	9,4	7,1	4,5	9,8
1991	6,6	7,1	9,5	6,6	8,2	9,9
1992						
Tapping 1990	UTS	UTS	UTS	UTS	UTS	UTS
System 199	N	N	N	N	N	N
199	UTS	UTS	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N	N	N
Stim. g/tree	1	1	1	1	1	1
frequency	8/y	8/y	8/y	8/y	8/y	8/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	400	400	400	400

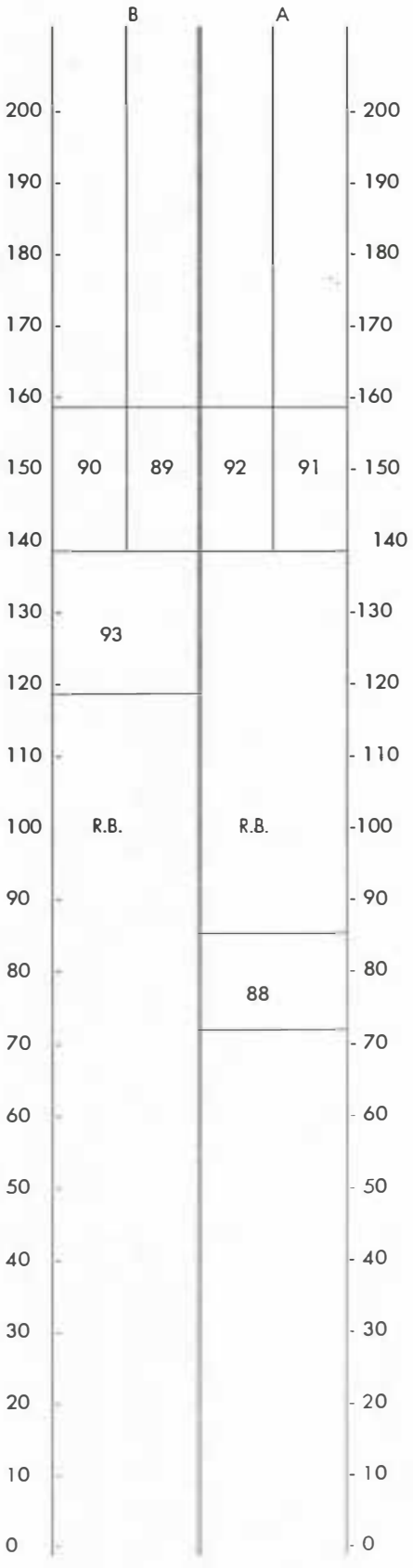
BLOCKS	31	32	33	49	50	18
Ref. block	50	50	50	50	50	50
PLANTING	1970	1970	1970	1970	1970	1972
CLONE	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1
Area (Ha)	5,20	1,58	10,49	31,60	23,40	6,20
Stand 1990	186	188	217	216	306	177
1991	163	202	217	201	291	150
1992						
Kg/Ha 1990	894	1185	736	1057	1498	578
1991	698	751	683	922	1501	498
1992						
Kg/Tree 1990	4,8	6,3	3,4	4,9	4,9	3,3
1991	4,3	3,7	3,1	4,6	5,2	3,3
1992						
Tapping 1990	UTS	UTS	UTS	UTS	UTS	UTS
System 199	N	N	N	N	N	N
199	UTS	UTS	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N	N	N
Stim. g/tree	1	1	1	1	1	1
frequency	8/y	8/y	8/y	8/y	8/y	8/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	400	400	400	400

Date of visit : 25/9/92
Name of the plantations : LIMA - PULUH (Lidah-Tanah)
Block : 1 (associated blocks 2-3-5)
area : 25 ha
clone : AVROS 2037
date of planting : 1971
date of opening : 1979



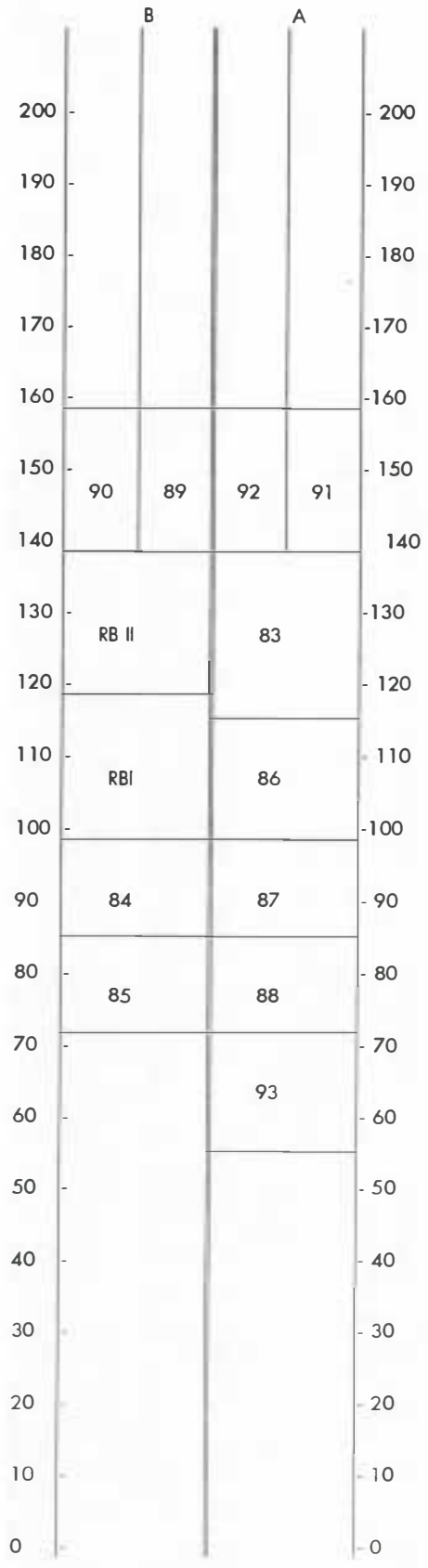
BLOCKS	01	02	03	05
Ref. block	1	1	1	1
PLANTING	1971	1971	1971	1971
CLONE	AV 2037	AV 2037	AV 2037	AV 2037
Area (Ha)	24,90	21,00	12,90	2,30
Stand 1990	311	339	305	314
1991	290	294	260	238
1992				
Kg/Ha 1990	1354	1563	1132	3560
1991	1415	1551	1092	2448
1992				
Kg/Tree 1990	4,4	4,6	3,7	11,3
1991	4,9	5,3	4,2	10,3
1992				
Tapping 1990	UTS	UTS	UTS	UTS
System 199	UTS	UTS	UTS	UTS
199	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N
Stim. g/tree	1	1	1	1
frequency	10/y	10/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%	5.0%
a.i./tree	500	500	500	500

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH (Lidah-Tanah)
Block : 11 (associated block 4)
area : 26 ha
clone : GT 1
date of planting : 1971
date of opening : 1979



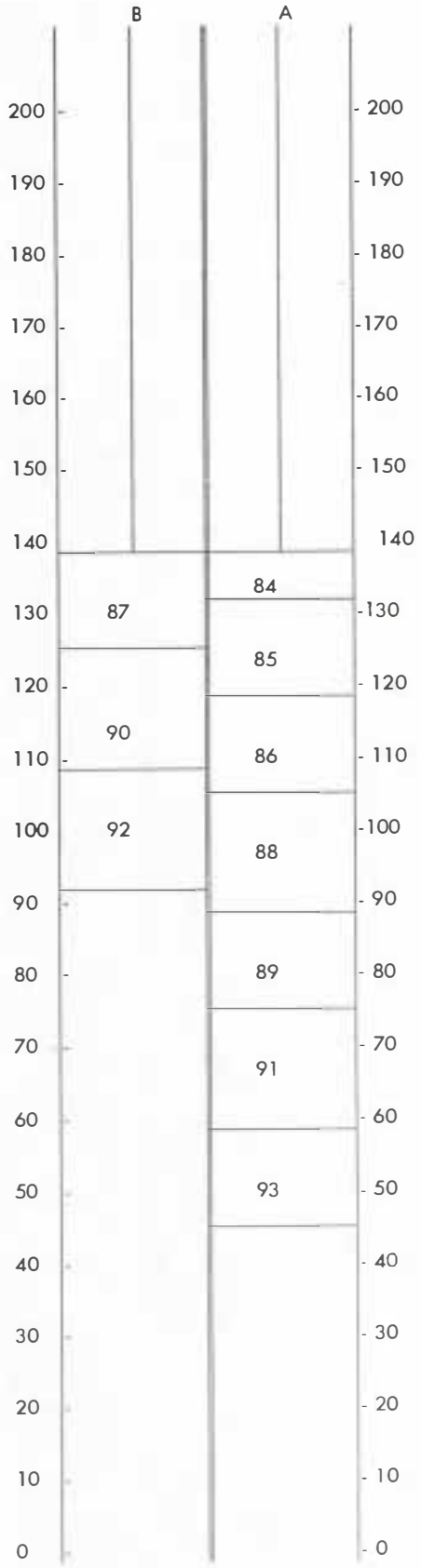
BLOCKS	04	11	11
Ref. block	11	11	11
PLANTING	1971	1971	1980
CLONE	GT 1	GT 1	AV 2037
Area (Ha)	12,50	25,30	24,80
Stand 1990	262	317	278
1991	251	336	264
1992			
Kg/Ha 1990	1014	1172	1559
1991	1015	1150	1537
1992			
Kg/Tree 1990	3,9	3,7	5,6
1991	4,0	3,4	5,8
1992			
Tapping 1990	UTS	UTS	N
System 199	UTS	UTS	N
199	UTS	UTS	N
TS 1993	N	N	UTS
Stim. g/tree	1	1	0,4
frequency	8/y	8/y	15/y
% Ethrel	5.0%	5.0%	5.0%
a.i./tree	400	400	300

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH (Lidah-Tanah)
Block : 7 (associated blocks 2- 5 - 6 - 8 - 9 - 10)
area : 20 ha
clone : GT 1
date of planting : 1972
date of opening :



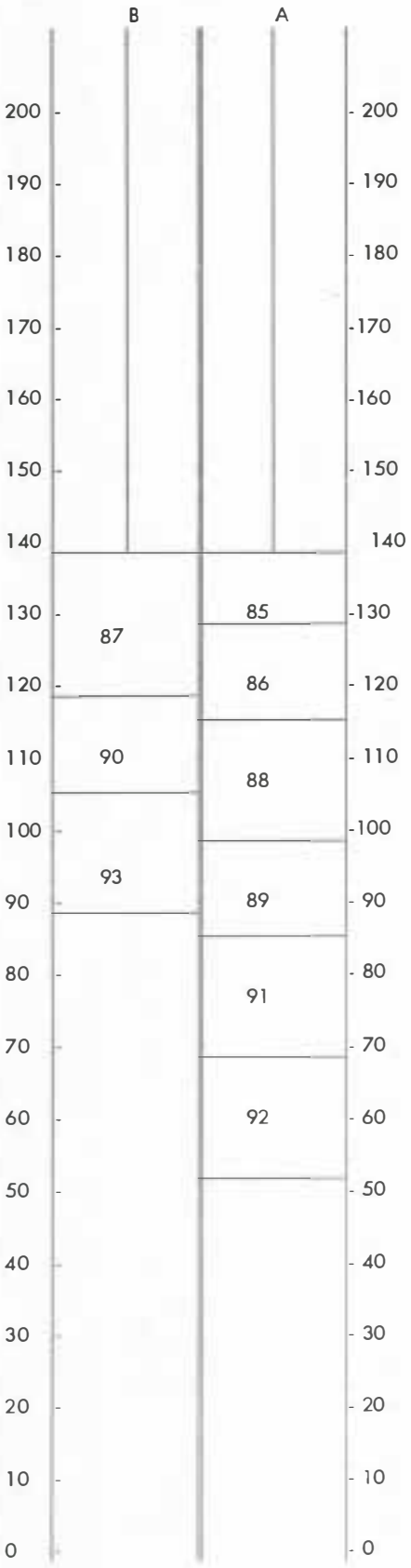
BLOCKS	02	05	06	07	08	09	10
Ref. block	7	7	7	7	7	7	7
PLANTING	1972	1972	1972	1972	1972	1972	1972
CLONE	[illegible]	AV 2037	AV 2037	GT 1	AV 2037	GT 1	AV 2037
Area (Ha)	1,40	11,82	9,45	20,10	13,90	20,70	14,80
Stand 1990	302	324	341	338	323	338	317
1991	311	275	226	327	336	318	305
1992							
Kg/Ha 1990	2542	1116	1855	2035	1613	2112	1862
1991	1639	1226	1879	1894	1630	1835	1580
1992							
Kg/Tree 1990	8,4	3,4	5,4	6,0	5,0	6,2	5,9
1991	5,3	4,5	8,3	5,8	4,9	5,8	5,2
1992							
Tapping 1990	UTS	UTS	UTS	UTS	UTS	UTS	UTS
System 199[illegible]	UTS	UTS	UTS	UTS	UTS	UTS	UTS
199[illegible]	UTS	UTS	UTS	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N	N	N	N
Stim. g/tree	1	1	1	1	1	1	1
frequency	10/y	10/y	10/y	8/y	10/y	8/y	10/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	500	500	500	400	500	400	500

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 10 (associated blocks : 23-47-50)
area : 37 ha
clone : GT 1
date of planting : 1979
date of opening : 1984



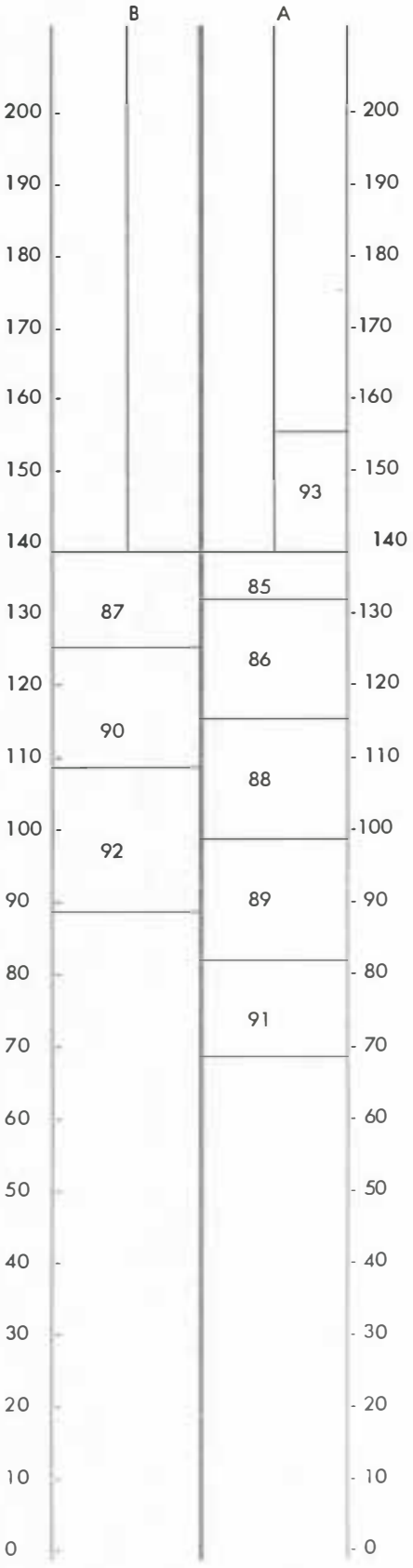
BLOCKS	10	23	47	47	47	47	50
Ref. block	10	10	10	10	10	10	10
PLANTING	1979	1979	1979	1979	1979	1979	1979
CLONE	GT 1	GT 1	AV 2037	PB 5/51	GT 1	PR 107	GT 1
Area (Ha)	37,30	20,10	18,30	1,33	21,49	18,54	7,36
Stand 1990	293	324	233	175	233	233	334
1991	269	349	241	167	218	223	332
1992							
Kg/Ha 1990	1942	2583	869	1439	1356	955	1347
1991	1282	1630	1086	1697	1273	902	1472
1992							
Kg/Tree 1990	6,6	8,0	3,7	8,2	5,8	4,1	4,0
1991	4,8	4,7	4,5	10,2	5,8	4,0	4,4
1992							
Tapping 1990	N	N	N	N	N	N	N
System 199	N	N	N	N	N	N	N
199	N	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8	0,8
frequency	10/y	10/y	12/y	6/y	10/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%	2.5%	5.0%	5.0%	5.0%
a.i./tree	400	400	480	120	400	400	400

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 34
area : 12 ha
clone : GT 1
date of planting : 1980
date of opening : 1985



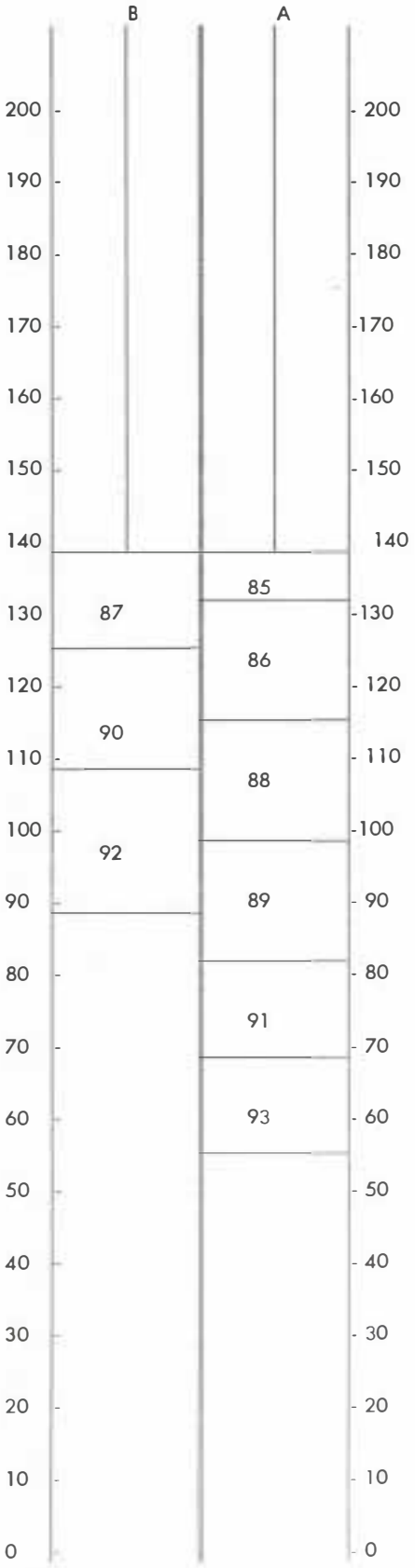
BLOCKS	34
Ref. block	34
PLANTING	1980
CLONE	GT 1
Area (Ha)	11,65
Stand 1990	400
1991	372
1992	
Kg/Ha 1990	2073
1991	1988
1992	
Kg/Tree 1990	5,2
1991	5,3
1992	
Tapping 1990	N
System 199	N
199	N
TS 1993	N
Stim. g/tree	0,8
frequency	10/y
% Ethrel	5.0%
a.i./tree	400

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 11
area : 25 ha
clone : AVROS 2037
date of planting : 1980
date of opening : 1985



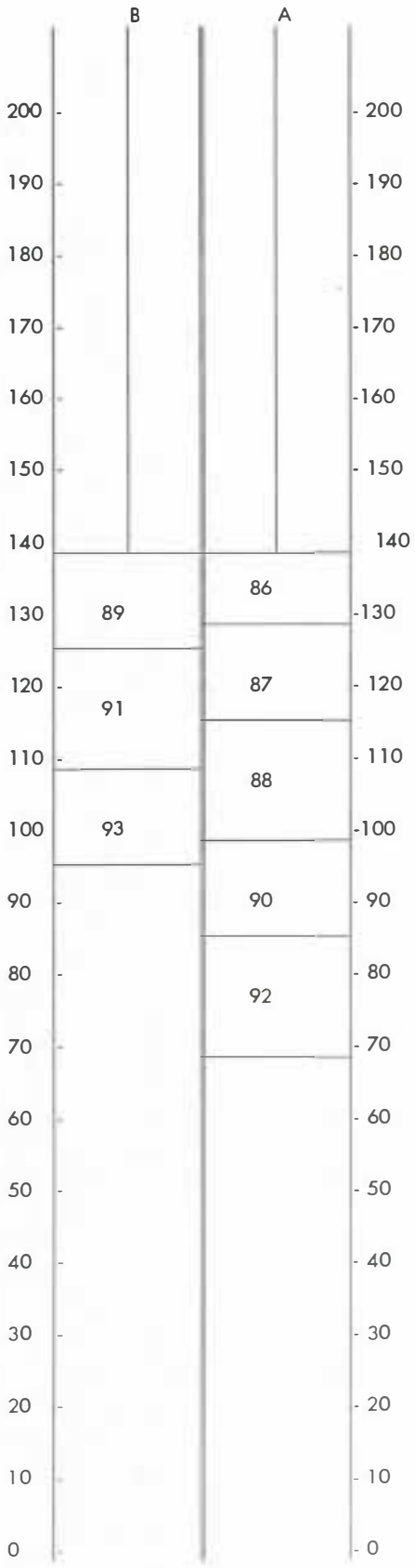
BLOCKS	04	11	11
Ref. block	11	11	11
PLANTING	1971	1971	1980
CLONE	GT 1	GT 1	AV 2037
Area (Ha)	12,50	25,30	24,80
Stand 1990	262	317	278
1991	251	336	264
1992			
Kg/Ha 1990	1014	1172	1559
1991	1015	1150	1537
1992			
Kg/Tree 1990	3,9	3,7	5,6
1991	4,0	3,4	5,8
1992			
Tapping 1990	UTS	UTS	N
System 199	UTS	UTS	N
199	UTS	UTS	N
TS 1993	N	N	UTS
Stim. g/tree	1	1	0,4
frequency	8/y	8/y	15/y
% Ethrel	5.0%	5.0%	5.0%
a.i./tree	400	400	300

Date of visit : 20/6/91
Name of the plantations : UMA - PULUH
Block : 48 (associated block 6)
area : 31 ha
clone : GT 1
date of planting : 1980
date of opening : 1985



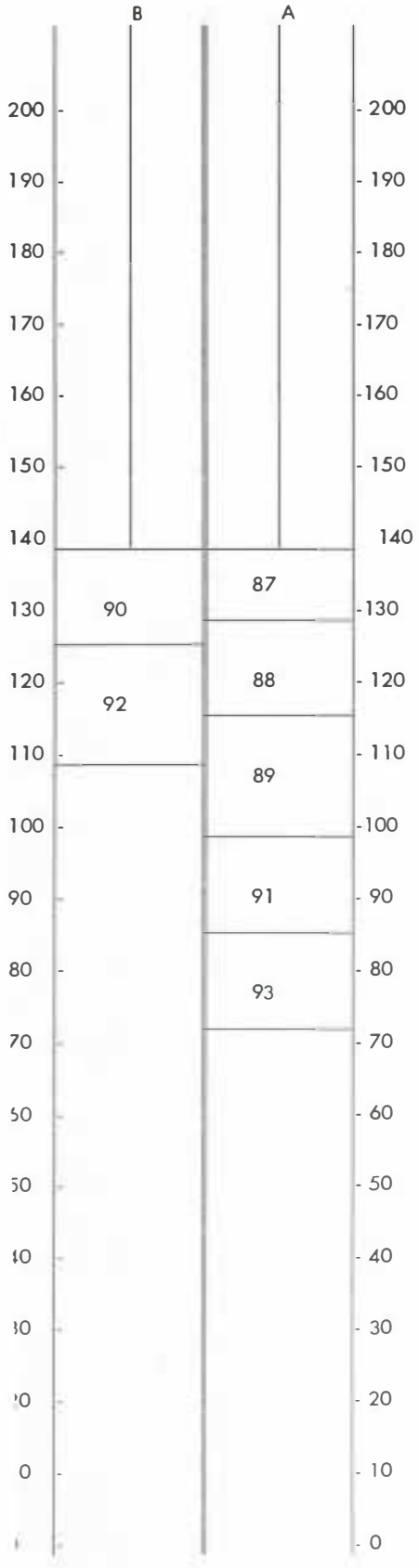
BLOCKS	06	48
Ref. block	48	48
PLANTING	1980	1980
CLONE	GT 1	GT 1
Area (Ha)	12,40	31,15
Stand 1990	273	309
1991	308	286
1992		
Kg/Ha 1990	2249	1375
1991	1728	1373
1992		
Kg/Tree 1990	8,2	4,4
1991	5,6	4,8
1992		
Tapping 1990	N	N
System 199	N	N
199	N	N
TS 1993	N	N
Stim. g/tree	0,8	0,8
frequency	10/y	10/y
% Ethrel	5.0%	5.0%
a.i./tree	400	400

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 25
area : 3 ha
clone : GT 1
date of planting : 1981
date of opening : 1986



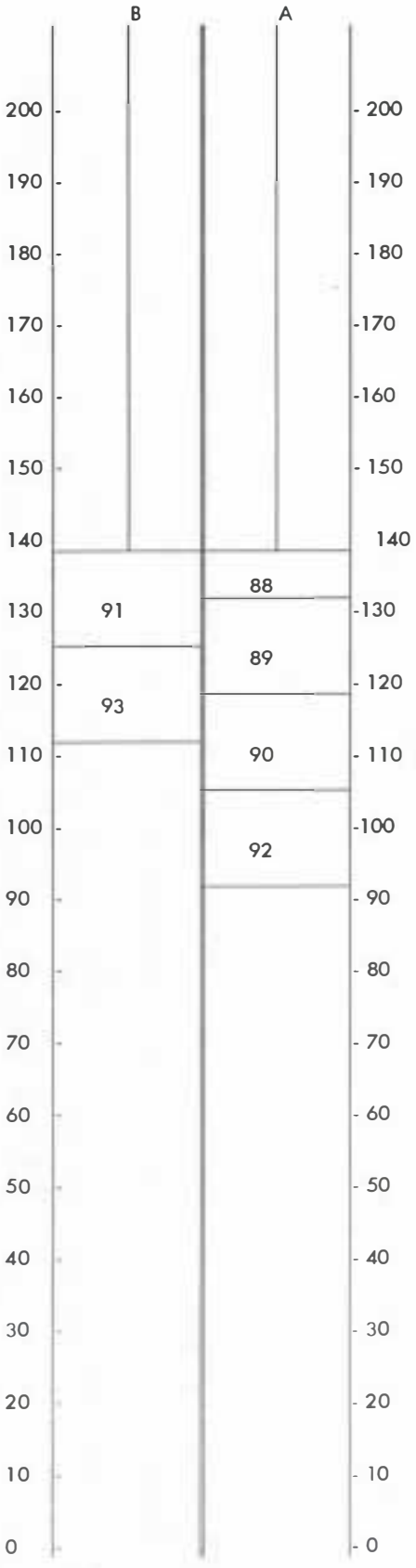
BLOCKS	25
Ref. block	25
PLANTING	1981
CLONE	GT 1
Area (Ha)	3,40
Stand 1990	377
1991	377
1992	
Kg/Ha 1990	1685
1991	1556
1992	
Kg/Tree 1990	4,5
1991	4,1
1992	
Tapping 1990	N
System 199	N
199	N
TS 1993	N
Stim. g/tree	0,8
frequency	10/y
% Ethrel	5.0%
a.i./tree	400

Date of visit : 29/5/92
Name of the plantations : UMA - PULUH
Block : 5 (associated blocks : 18-37)
area : 17 ha
clone : GT 1
date of planting : 1982
date of opening : 1987



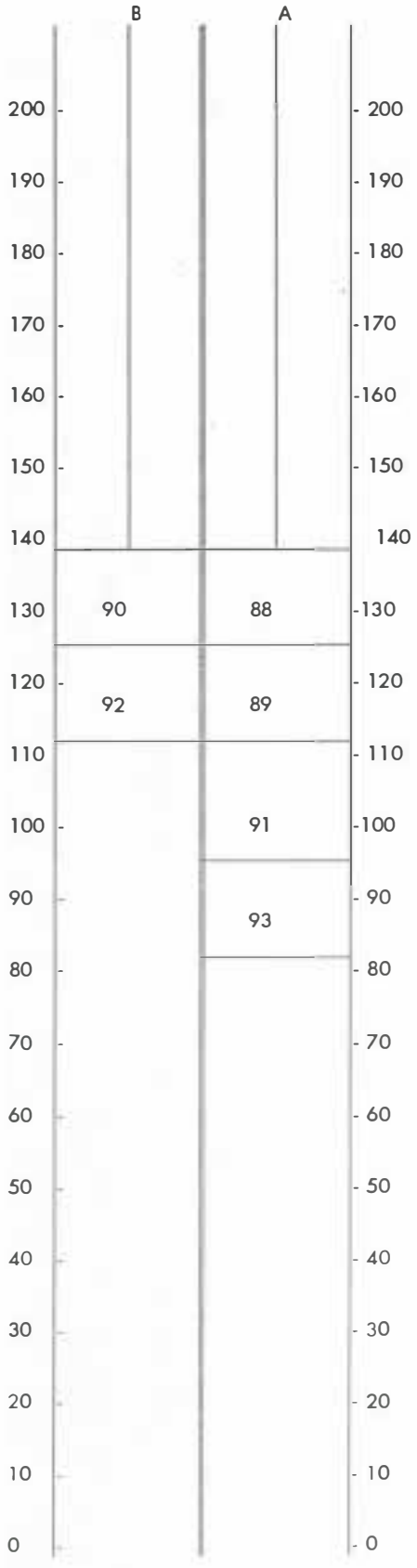
BLOCKS	05	18	37
Ref. block	5	5	5
PLANTING	1982	1982	1982
CLONE	GT 1	GT 1	AV 2037
Area (Ha)	17,60	16,60	31,60
Stand 1990	392	287	318
1991	385	293	307
1992			
Kg/Ha 1990	1901	941	1260
1991	2005	920	1407
1992			
Kg/Tree 1990	4,8	3,3	4,0
1991	5,2	3,1	4,6
1992			
Tapping 1990	N	N	N
System 199	N	N	N
199	N	N	N
TS 1993	N	N	N
Stim. g/tree	0,8	0,8	0,8
frequency	10/y	10/y	12/y
% Ethrel	5.0%	5.0%	5.0%
a.i./tree	400	400	480

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 40
area : 45 ha
done : PR 255 (22 ha) - PR 261 (11 ha) - PB 5/51 (12 ha)
date of planting : 1983
date of opening : 1988



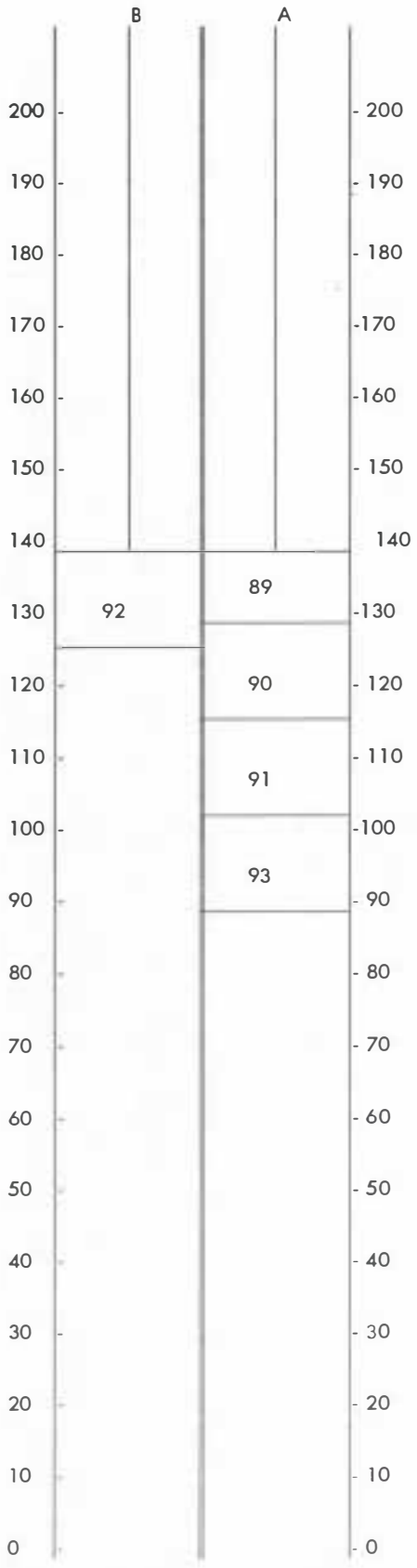
BLOCKS	40	40	40
Ref. block	40	40	40
PLANTING	1983	1983	1983
CLONE	PR 255	PB 5/51	PR 261
Area (Ha)	23,88	10,36	10,81
Stand 1990	298	298	298
1991	224	224	224
1992			
Kg/Ha 1990	1554	984	1237
1991	1210	1103	1074
1992			
Kg/Tree 1990	5,2	3,3	4,2
1991	5,4	4,9	4,8
1992			
Tapping 1990	N	N	N
System 199	N	N	N
199	N	N	N
TS 1993	N	N	N
Stim. g/tree	0,8	0,8	0,8
frequency	12/y	5/y	5/y
% Ethrel	2.5%	2.5%	2.5%
a.i./tree	240	100	100

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 39
area : 43 ha
clone : PB 235 (21 ha) - PB 260 (22 ha)
date of planting : 1983
date of opening : 1988



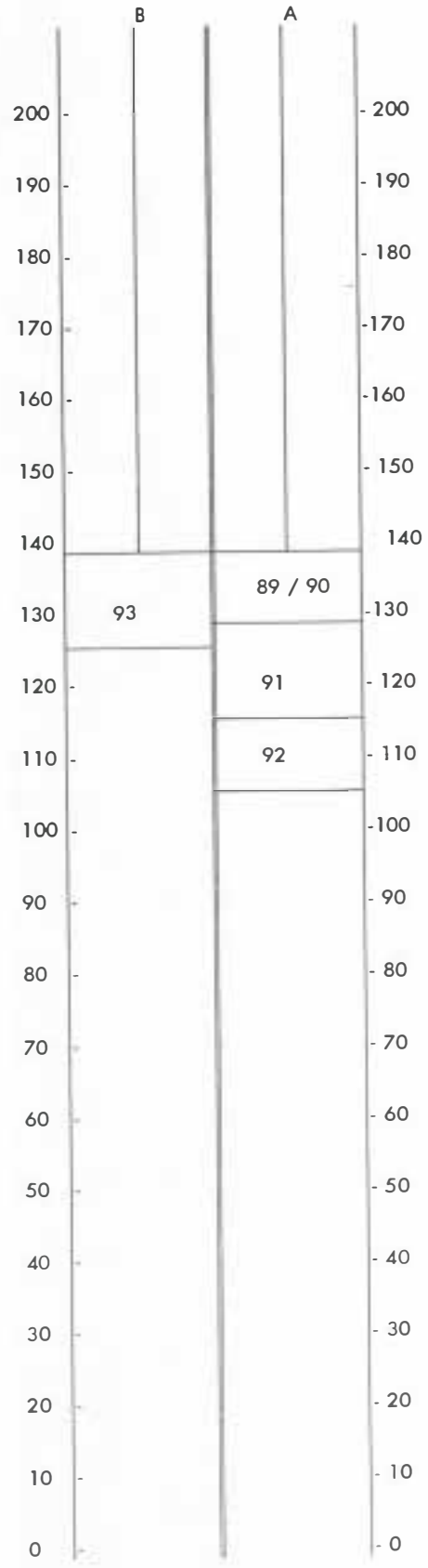
BLOCKS	39	39
Ref. block	39	39
PLANTING	1983	1983
CLONE	PB 235	PB 260
Area (Ha)	20,83	22,57
Stand 1990	298	290
1991	283	283
1992		
Kg/Ha 1990	1487	1707
1991	1135	1628
1992		
Kg/Tree 1990	5,0	5,9
1991	4,0	5,8
1992		
Tapping 1990	N	N
System 199	N	N
199	N	N
TS 1993	N	N
Stim. g/tree	0,8	0,8
frequency	5/y	5/y
% Ethrel	2.5%	2.5%
a.i./tree	100	100

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 36 (associated blocks 37 - 38)
area : 56 ha
clone : PB 260 (28 ha) - PB 235 (30 ha)
date of planting : 1984
date of opening : 1989



BLOCKS	36	36	37	37	38
Ref. block	36	36	36	36	36
PLANTING	1984	1984	1984	1984	1984
CLONE	PB 235	PB 260	PR 255	PB 235	PB 235
Area (Ha)	26,89	29,86	9,60	8,39	9,70
Stand 1990	319	320	297	297	277
1991	338	338	324	323	288
1992					
Kg/Ha 1990	1368	1500	990	1256	1265
1991	1411	1761	1267	1284	1643
1992					
Kg/Tree 1990	4,3	4,7	3,3	4,2	4,6
1991	4,2	5,2	3,9	4,0	5,7
1992					
Tapping 1990	N	N	N	N	N
System 199	N	N	N	N	N
199	N	N	N	N	N
TS 1993	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8
frequency	5/y	5/y	12/y	5/y	5/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	100	100	240	100	100

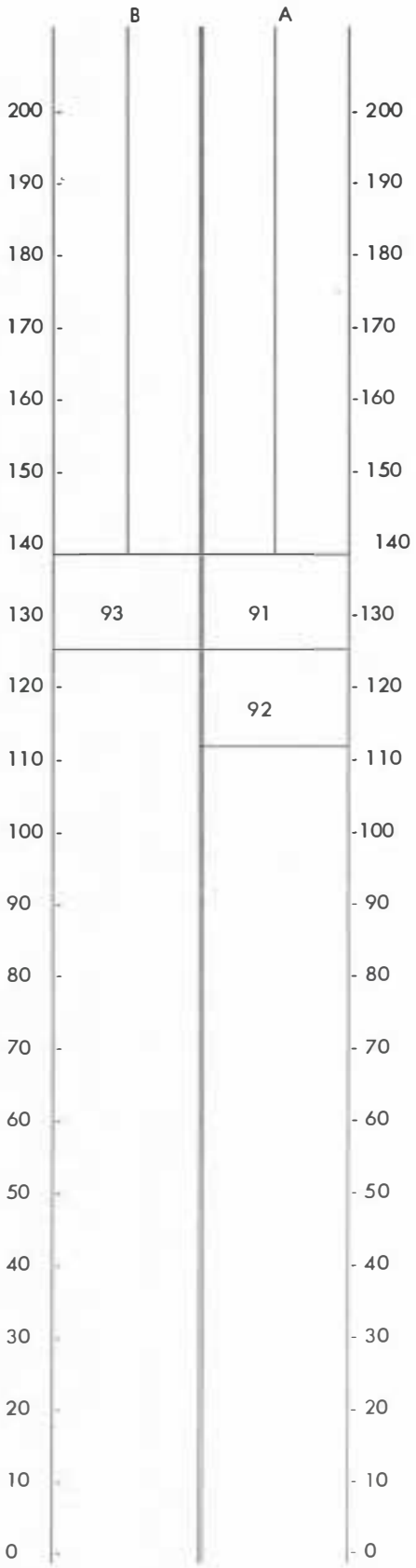
Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 6 (associated blocks 5-13)
area : 35 ha
done : PR 261 = 24 ha - BPM 84 = 7 ha - PB 235 = 4 ha
date of planting : 1985
date of opening : 1990



BLOCKS	05	05	05	06
Ref. block	6	6	6	6
PLANTING	1985	1985	1985	1985
CLONE	PB 260	PB 235	PR 255	PB 235
Area (Ha)	24,56	10,65	10,57	3,65
Stand 1990	329	339	339	322
1991	327	352	352	352
1992				
Kg/Ha 1990	1121	945	524	686
1991	1604	1286	1228	1567
1992				
Kg/Tree 1990	3,4	2,8	1,5	2,1
1991	4,9	3,7	3,5	4,5
1992				
Tapping 1990	N	N	N	N
System 199	N	N	N	N
199	N	N	N	N
TS 1993	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8
frequency	5/y	5/y	12/y	5/y
% Ethrel	2.5%	2.5%	2.5%	2.5%
a.i./tree	100	100	240	100

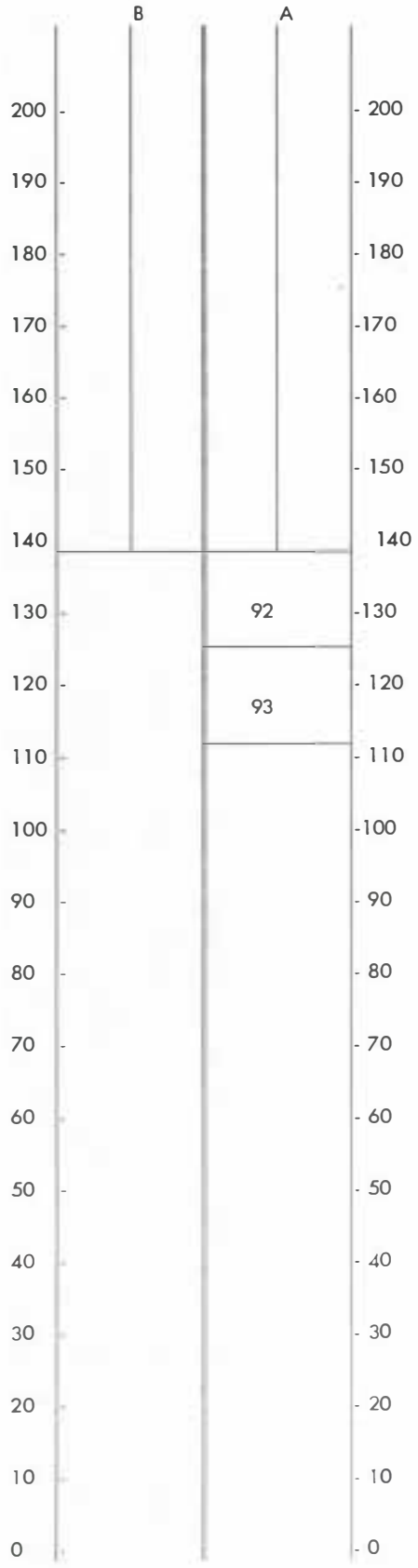
BLOCKS	06	06	13	13
Ref. block	6	6	6	6
PLANTING	1985	1985	1985	1985
CLONE	PR 261	BPM 24	SP	PB 235
Area (Ha)	24,10	6,79	18,00	19,24
Stand 1990	320	321	151	164
1991	341	352	247	335
1992				
Kg/Ha 1990	503	205	290	1011
1991	1138	1242	889	943
1992				
Kg/Tree 1990	1,6	0,6	1,9	6,2
1991	3,3	3,5	3,6	2,8
1992				
Tapping 1990	N	N	N	N
System 199	N	N	N	N
199	N	N	N	N
TS 1993	N	N	N	N
Stim. g/tree	0,8	0,8		0,8
frequency	5/y	12/y		5/y
% Ethrel	2.5%	2.5%		2.5%
a.i./tree	100	240		100

Date of visit : 29/5/92
Name of the plantations : LIMA - PULUH
Block : 28 (associated blocks 25-41)
area : 40 ha
clone : PB 260
date of planting : 1986
date of opening : 1991



BLOCKS	25	25	25	28	41
Ref. block	28	28	28	28	28
PLANTING	1986	1986	1986	1986	1986
CLONE	PR 261	TM 8	RR 712	PB 260	PB 235
Area (Ha)	23,36	9,78	10,41	40,20	44,10
Stand 1990	0	0	0	0	0
1991	0	179	0	277	272
1992					
Kg/Ha 1990	0	0	0	0	0
1991	0	320	0	938	979
1992					
Kg/Tree 1990	0,0	0,0	0,0	0,0	0,0
1991	0,0	1,8	0,0	3,4	3,6
1992					
Tapping 1990	0	0	0	0	0
System 199	N	N	0	N	N
199	N	N	N	N	N
TS 1993	N	N	N	N	N
Stim. g/tree	0,7	0,7	0,7	0,7	0,7
frequency	4/y	10/y	10/y	4/y	4/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	70	175	175	70	70

Date of visit : 29/5/92
Name of the plantations : UMA - PULUH
Block : 42
area : 53 ha
clone : PB 235
date of planting : 1987
date of opening : 1992



BLOCKS	42	42
Ref. block	42	42
PLANTING	1987	1987
CLONE	RR 712	PB 235
Area (Ha)	7,78	52,79
Stand 1990	0	0
1991	0	0
1992		
Kg/Ha 1990	0	0
1991	0	0
1992		
Kg/Tree 1990	0,0	0,0
1991	0,0	0,0
1992		
Tapping 1990	0	0
System 199	0	0
199	N	N
TS 1993	N	N
Stim. g/tree	0,7	0,7
frequency	10/y	4/y
% Ethrel	2.5%	2.5%
a.i./tree	175	70

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The distribution of production according to age (figure 9) reveals low production in the following blocks:

Nos. 80 & 82	: GT 1 at 0.8 m and PR 107 in third tapping year
No. 64	: Area of 0.62 ha, to be revised
No. 65	: AVROS, upward tapping 8 years after opening
No. 78	: GT 1, 1979
No. 14	: GT 1, 1975 in 3rd year of upward tapping
Nos. 55-59	: Many zones in bottomlands and leaf diseases in 1991
No. 33	: GT 1, 1973, possible mix with block 36
Nos. 21-22 & 32-35	: 3rd consecutive year of upward tapping

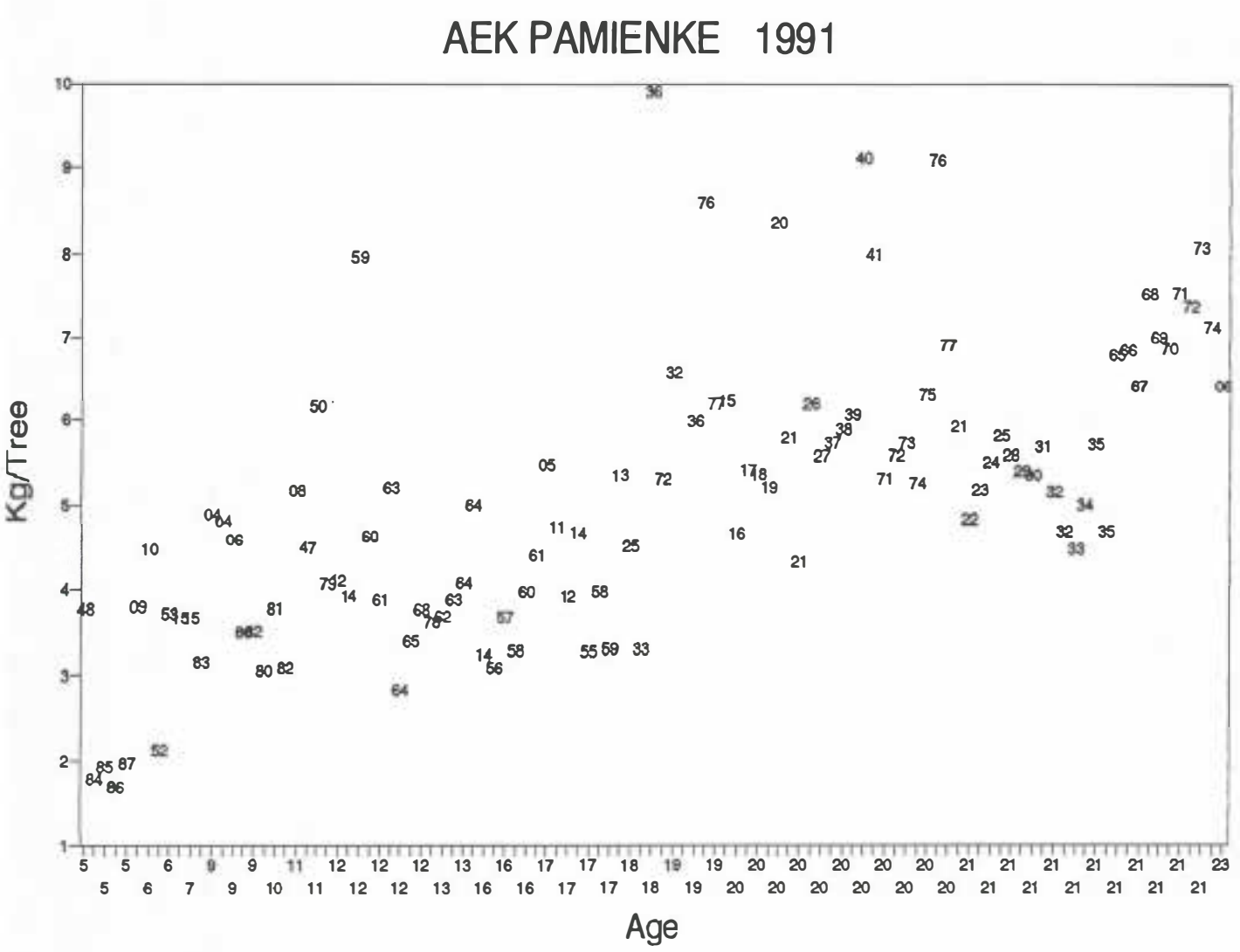
The data for block 59 (0.53 ha) and the number of trees/ha in blocks 76 to 80 (GT 1, 1971) should be checked.

Production is very good in blocks 40 and 41.

Block 48 (PB 235, aged 5 years) with 3.8 kg/tree should not be stimulated; production is high and some trees show signs of bark necrosis.

With upward tapping, it is recommended to avoid excessive consumption of the lower latex recovery cut.

FIGURE N° 9



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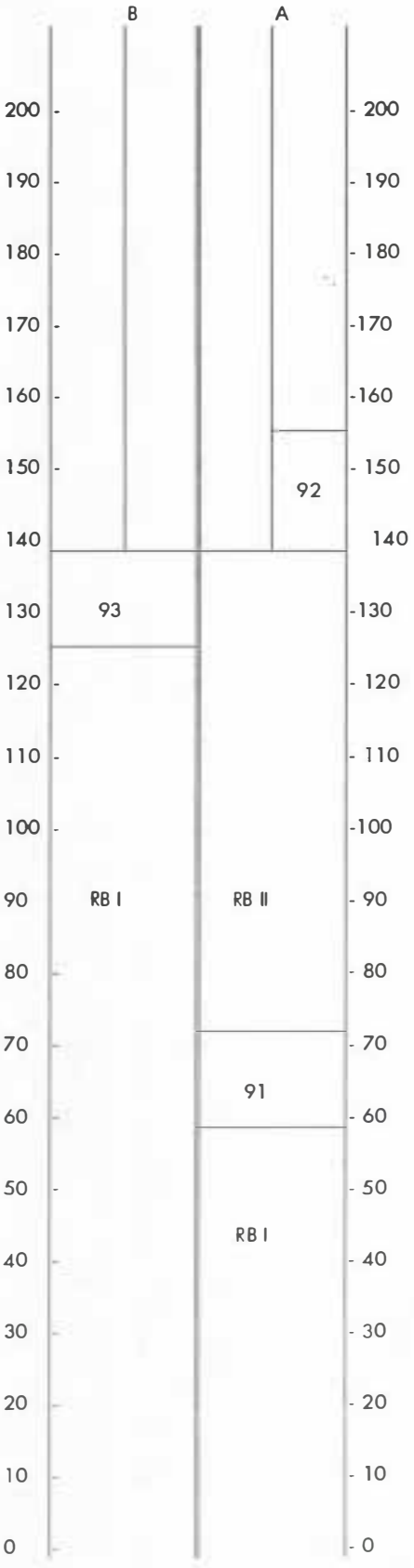
BLOCK	Ref. block	Planting Year	CLONE	Area Ha	Tapping 1992	System 1993
03	3	1987	PB 235	2,25	N	N
04	4	1982	AV 2037	36,00	N	N
04	4	1982	GT 1	32,00	N	N
05	55	1974	GT 1	5,00	UTS	UTS
06	6	1968	GT 1	39,44	UTS	N
06	4	1982	GT 1	2,00	N	N
07	3	1987	PB 235	45,17	N	N
08	8	1980	GT 1	5,00	N	N
08	3	1987	PB 235	69,59	N	N
09	9	1985	PB 235	49,36	N	N
09	3	1987	PB 235	5,10	N	N
10	9	1985	PB 260	44,29	N	N
11	55	1974	GT 1	25,00	UTS	UTS
12	55	1974	GT 1	62,20	UTS	UTS
12	55	1979	GT 1	37,76	N	UTS
13	13	1973	GT 1	61,89	UTS	N
14	14	1974	GT 1	37,80	UTS	N
14	14	1975	GT 1	13,19	UTS	N
14	14	1979	PR 107	13,98	UTS	N
15	21	1971	GT 1	63,86	N	UTS
15	9	1984	GT 1	6,00	N	N
15	9	1984	GT 1	6,00	N	N
16	21	1971	GT 1	52,65	N	UTS
17	21	1971	GT 1	49,02	N	UTS
18	21	1971	GT 1	44,13	N	UTS
19	21	1971	GT 1	26,97	N	UTS
20	21	1971	GT 1	61,90	N	UTS
21	32	1970	GT 1	4,38	N	UTS
21	21	1971	AV 2037	32,00	N	UTS
21	21	1971	GT 1	40,99	N	UTS
22	32	1970	GT 1	69,23	N	UTS
23	32	1970	GT 1	62,59	N	UTS
24	71	1970	GT 1	56,72	N	UTS
25	71	1970	GT 1	27,24	N N	UTS
25	32	1973	GT 1	6,39	~~UTS~~	UTS ~~N~~
26	21	1971	GT 1	35,18	N	UTS
27	27	1971	GT 1	32,81	UTS	N
28	32	1970	GT 1	45,61	N	UTS

29	71	1970	GT 1	23,20	N	UTS	
30	71	1970	GT 1	25,07	N	UTS	
31	71	1970	GT 1	28,05	N	UTS	
32	32	1970	AV 2037	10,00	N	UTS	
32	32	1970	GT 1	36,11	N	UTS	
32	36	1972	GT 1	10,20	N	UTS	
33	71	1970	GT 1	29,18	N	UTS	
33	36	1972	GT 1	5,60	N	UTS	
33	13	1973	GT 1	2,87	UTS	N	
34	71	1970	GT 1	39,06	N	UTS	
35	32	1970	AV 2037	10,00	N	UTS	
35	32	1970	GT 1	16,68	N	UTS	
36	36	1972	GT 1	3,71	N	UTS	
36	13	1973	GT 1	8,15	UTS	N	
37	27	1971	GT 1	52,21	UTS	N	
38	27	1971	GT 1	46,87	UTS	N	
39	27	1971	GT 1	65,28	UTS	N	
40	27	1971	GT 1	43,53	UTS	N	
41	27	1971	GT 1	55,34	UTS	N	
44	3	1987	PB 260	40,55	N	N	
47	8	1980	GT 1	45,55	N	N	
48	48	1986	PB 235	30,00	N	N	
50	8	1980	GT 1	2,90	N	N	
52	48	1985	PR 255	41,55	N	N	
53	48	1985	PR 261	26,80	N	N	
55	55	1974	AV 2037	46,10	UTS	UTS	
56	60	1975	GT 1	50,37	UTS	N	
57	60	1975	~~GT 1~~	33,56	UTS	N	AVROS
58	60	1974	AV 2037	47,82	UTS	N	
58	60	1975	GT 1	12,42	UTS	N	
59	55	1974	AV 2037	24,78	UTS	UTS	
59	14	1979	GT 1	0,53	UTS	N	
60	60	1975	GT 1	35,66	UTS	N	
60	14	1979	GT 1	13,70	UTS	N	
61	60	1975	GT 1	40,75	UTS	N	
61	61	1979	GT 1	11,95	N	N	
62	62	1978	GT 1	44,73	N	N	
63	62	1978	GT 1	56,18	N	N	
63	14	1979	GT 1	12,96	UTS	N	
64	64	1978	AV 2037	15,66	N	N	
64	64	1978	PR 107	18,64	N	N	
64	14	1979	GT 1	0,62	UTS	N	
65	71	1970	GT 1	34,81	N	UTS	

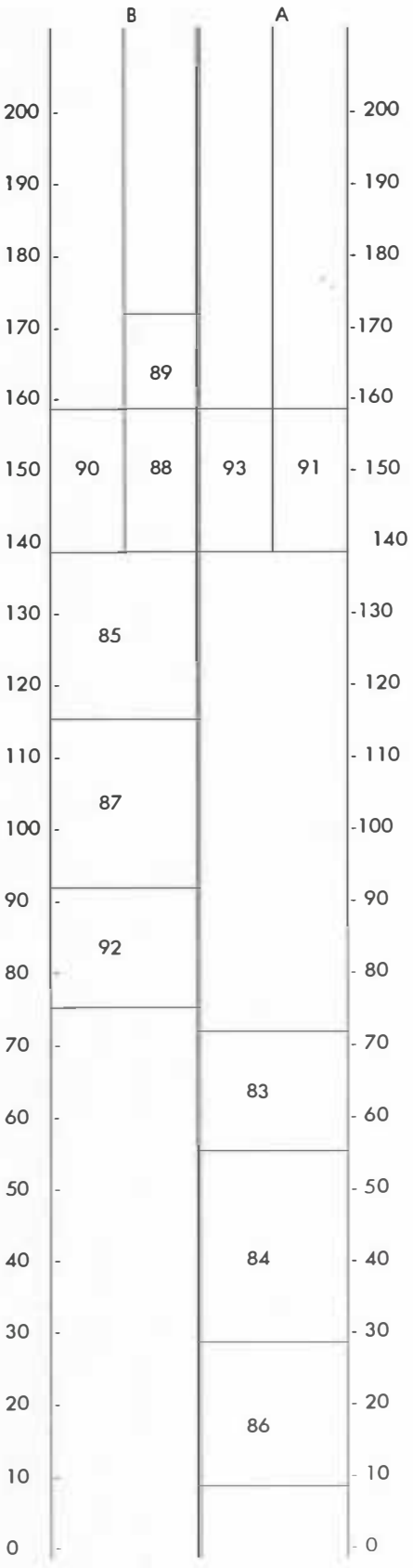
65	68	1979	AV 2037	10,27	N	UTS	
66	32	1970	GT 1	37,73	N	UTS	
67	71	1970	GT 1	34,77	N	UTS	
68	71	1970	GT 1	17,32	N	UTS	
68	68	1979	~~PR 107~~	25,30	N	UTS	A Pres.
69	71	1970	GT 1	20,30	N	UTS	
70	71	1970	GT 1	30,29	N	UTS	
71	71	1970	GT 1	28,96	N	UTS	
71	71	1971	GT 1	1,18	N	UTS	
72	71	1970	GT 1	19,78	N	UTS	
72	71	1971	GT 1	4,92	N	UTS	
72	13	1973	GT 1	2,80	UTS	N	
73	32	1970	GT 1	7,49	N	UTS	
73	71	1971	GT 1	5,33	N	UTS	
74	71	1970	GT 1	5,78	N	UTS	
74	71	1971	GT 1	14,05	N	UTS	
75	27	1971	GT 1	38,82	UTS	N	
76	27	1971	GT 1	19,12	UTS	N	
76	27	1972	GT 1	2,29	UTS	N	
77	27	1971	GT 1	38,55	UTS	N	
77	27	1972	GT 1	2,68	UTS	N	
78	78	1979	~~GT 1~~	13,75	N	N	PR 107
79	78	1980	PR 107	22,75	N	N	
80	78	1981	PR 107	21,07	N	N	
80	4	1982	GT 1	6,00	N	N	
81	81	1981	GT 1	44,36	N	N	
82	81	1981	~~PR 107~~	29,08	N	N	GT 1
83	4	1982	~~PR 107~~	11,06	N	N	GT 1
83	9	1984	GT 1	4,00	N	N	
84	48	1986	PB 260	46,07	N	N	
85	48	1986	PB 260	45,62	N	N	
86	48	1986	PB 260	48,54	N	N	
87	48	1986	PB 235	59,77	N	N	
88	3	1987	PB 260	47,43	N	N	
89	3	1987	PB 260	39,15	N	N	
90	3	1987	PB 260	25,56	N	N	
91	3	1987	PB 260	28,25	N	N	

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 6
area : 39 ha
clone : GT 1
date of planting : 1968
date of opening :



BLOCKS	06
Ref. block	6
PLANTING	1968
CLONE	GT 1
Area (Ha)	39,44
Stand 1990	269
1991	199
1992	
Kg/Ha 1990	1634
1991	1275
1992	
Kg/Tree 1990	6,1
1991	6,4
1992	
Tapping 1990	N
System 199	N
199	UTS
TS 1993	N
Stim. g/tree	1
frequency	8/y
% Ethrel	5.0%
a.i./tree	400

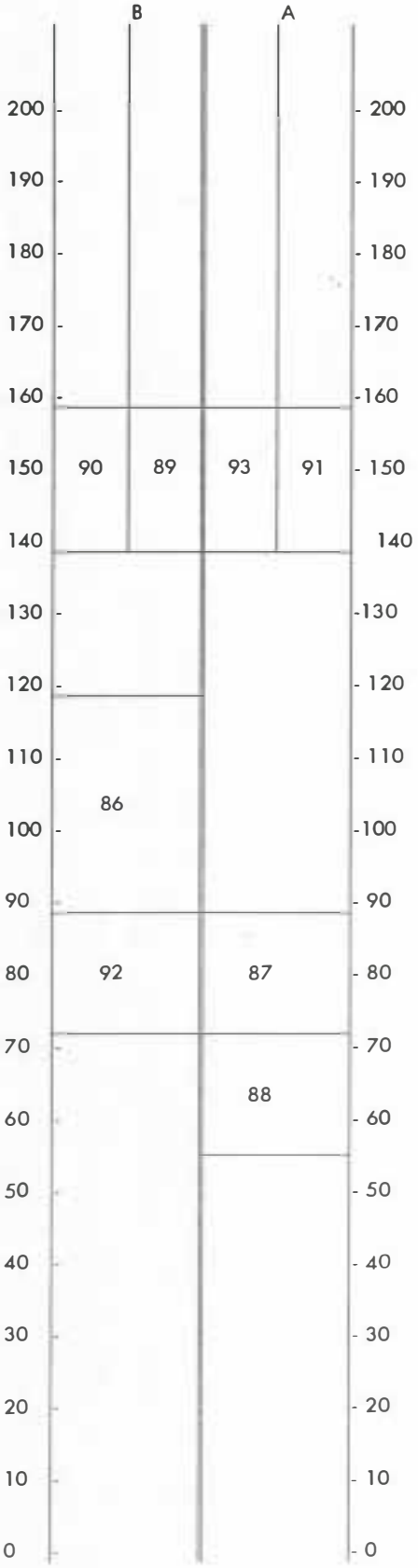
Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 32 (associated blocks for tapping and production 21-22-23-28-35-66-73)
area : 46 ha
done : GT 1 = 36 ha - AV 2037 = 10 ha
date of planting : 1970
date of opening : 1979



BLOCKS	21	22	23	28	32
Ref. block	32	32	32	32	32
PLANTING	1970	1970	1970	1970	1970
CLONE	GT 1	GT 1	GT 1	GT 1	AV 2037
Area (Ha)	4,38	69,23	62,59	45,61	10,00
Stand 1990	235	284	170	262	405
1991	205	250	155	218	315
1992					
Kg/Ha 1990	982	1188	767	1208	1699
1991	1218	1207	805	1221	1476
1992					
Kg/Tree 1990	4,2	4,2	4,5	4,6	4,2
1991	5,9	4,8	5,2	5,6	4,7
1992					
Tapping 1990	UTS	UTS	UTS	UTS	UTS
System 199	UTS	UTS	UTS	UTS	UTS
199	N	N	N	N	N
TS 1993	UTS	UTS	UTS	UTS	UTS
Stim. g/tree	0,5	0,5	0,5	0,5	0,5
frequency	13/y	13/y	13/y	13/y	15/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	325	325	325	325	375

BLOCKS	32	35	35	66	73
Ref. block	32	32	32	32	32
PLANTING	1970	1970	1970	1970	1970
CLONE	GT 1	GT 1	AV 2037	GT 1	GT 1
Area (Ha)	36,11	16,68	10,00	37,73	7,49
Stand 1990	289	319	315	245	215
1991	272	275	315	216	131
1992					
Kg/Ha 1990	1348	1586	1424	1213	924
1991	1405	1574	1476	1480	1060
1992					
Kg/Tree 1990	4,7	5,0	4,5	5,0	4,3
1991	5,2	5,7	4,7	6,9	8,1
1992					
Tapping 1990	UTS	UTS	UTS	UTS	UTS
System 199	UTS	UTS	UTS	UTS	UTS
199	N	N	N	N	N
TS 1993	UTS	UTS	UTS	UTS	UTS
Stim. g/tree	0,5	0,5	0,5	0,5	0,5
frequency	13/y	13/y	15/y	13/y	13/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	325	325	375	325	325

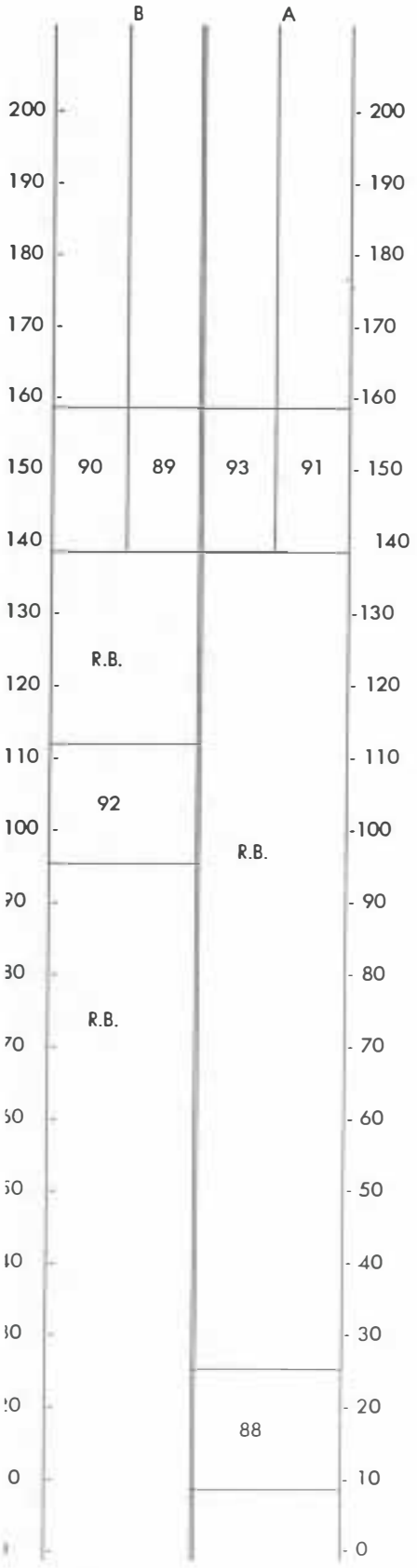
Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 71 (associated blocks tapping and production : 24-25-29-30-31-33-34-65-67-68-69-70-72-74)
area : 29 ha
clone : GT 1
date of planting : 1970
date of opening : 1979



BLOCKS	24	25	29	30	31	33	34	65	67
Ref. block	71	71	71	71	71	71	71	71	71
PLANTING	1970	1970	1970	1970	1970	1970	1970	1970	1970
CLONE	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1
Area (Ha)	56,72	27,24	23,20	25,07	28,05	29,18	39,06	34,81	34,77
Stand 1990	333	268	336	327	286	248	281	330	326
1991	297	279	305	285	287	276	267	289	303
1992									
Kg/Ha 1990	1635	1624	1587	1543	1572	1190	1408	1701	1589
1991	1639	1627	1653	1530	1636	1232	1330	1967	1943
1992									
Kg/Tree 1990	4,9	6,1	4,7	4,7	5,5	4,8	5,0	5,2	4,9
1991	5,5	5,8	5,4	5,4	5,7	4,5	5,0	6,8	6,4
1992									
Tapping 1990	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS
System 199	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS
199	N	N	N	N	N	N	N	N	N
TS 1993	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS
Stim. g/tree	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
frequency	13/y	13/y	13/y	13/y	13/y	13/y	13/y	13/y	13/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	325	325	325	325	325	325	325	325	325

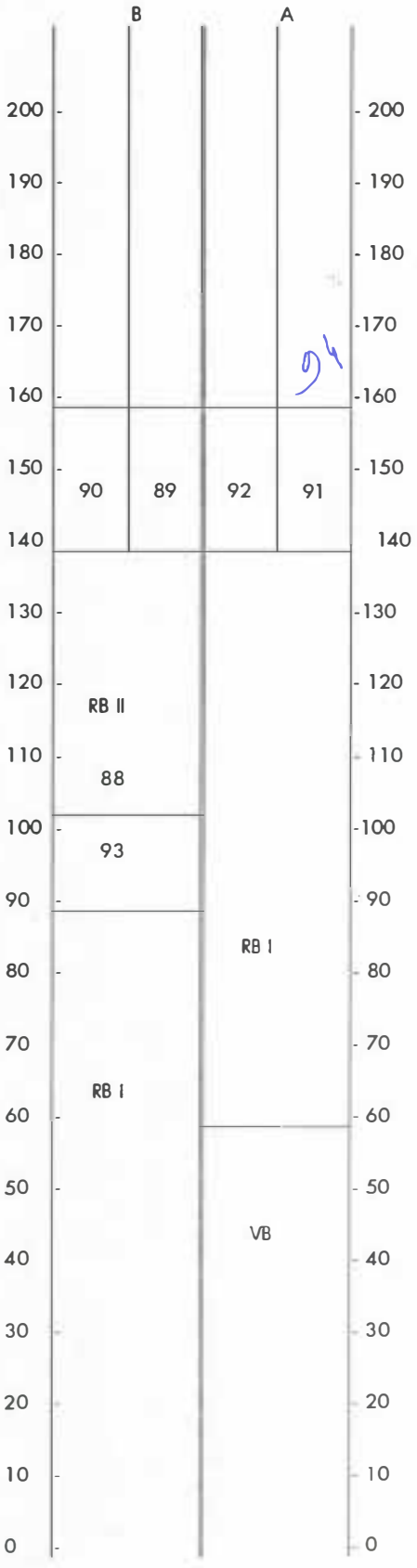
68	69	70	71	72	74	71	72	73	74
71	71	71	71	71	71	71	71	71	71
1970	1970	1970	1970	1970	1970	1971	1971	1971	1971
GT 1	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1
17,32	20,30	30,29	28,96	19,78	5,78	1,18	4,92	5,33	14,05
273	326	276	384	271	353	337	395	256	362
267	312	249	323	262	347	323	386	246	336
1580	1799	1693	2146	1802	2382	1485	2047	1274	1662
2010	2184	1711	2442	1933	2475	1719	2164	1411	1771
5,8	5,5	6,1	5,6	6,6	6,8	4,4	5,2	5,0	4,6
7,5	7,0	6,9	7,6	7,4	7,1	5,3	5,6	5,7	5,3
UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS
UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS
N	N	N	N	N	N	N	N	N	N
UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS
0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
13/y	13/y	13/y	13/y	13/y	13/y	13/y	13/y	13/y	13/y
5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
325	325	325	325	325	325	325	325	325	325

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 21 (associated blocks : 15 -16 - 17 - 18 - 19 - 20 - 26)
area : 72 ha
clone : AVROS 2037 = 32 ha - GT 1 = 40 ha
date of planting : 1971
date of opening : 1979



BLOCKS	15	16	17	18	19	20	21	21	26
Ref. block	21	21	21	21	21	21	21	21	21
PLANTING	1971	1971	1971	1971	1971	1971	1971	1971	1971
CLONE	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1	AV 2037	GT 1
Area (Ha)	63,86	52,65	49,02	44,13	26,97	61,90	40,99	32,00	35,18
Stand 1990	328	336	379	299	330	322	366	309	338
1991	324	328	352	282	316	216	360	239	319
1992									
Kg/Ha 1990	1678	1469	1686	1374	1493	1659	2126	1150	1856
1991	2018	1526	1914	1518	1654	1804	2087	1030	1978
1992									
Kg/Tree 1990	5,1	4,4	4,4	4,6	4,5	5,2	5,8	3,7	5,5
1991	6,2	4,7	5,4	5,4	5,2	8,4	5,8	4,3	6,2
1992									
Tapping 1990	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS
System 199	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS
199	N	N	N	N	N	N	N	N	N
TS 1993	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS	UTS
Stim. g/tree	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5
frequency	13/y	13/y	13/y	13/y	13/y	13/y	13/y	15/y	13/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	325	325	325	325	325	325	325	375	325

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 27 (associated blocks - 37 - 38 - 39 - 40 - 41 - 75 - 76 - 77)
area : 32 ha
clone : GT 1
date of planting : 1971
date of opening : 1979

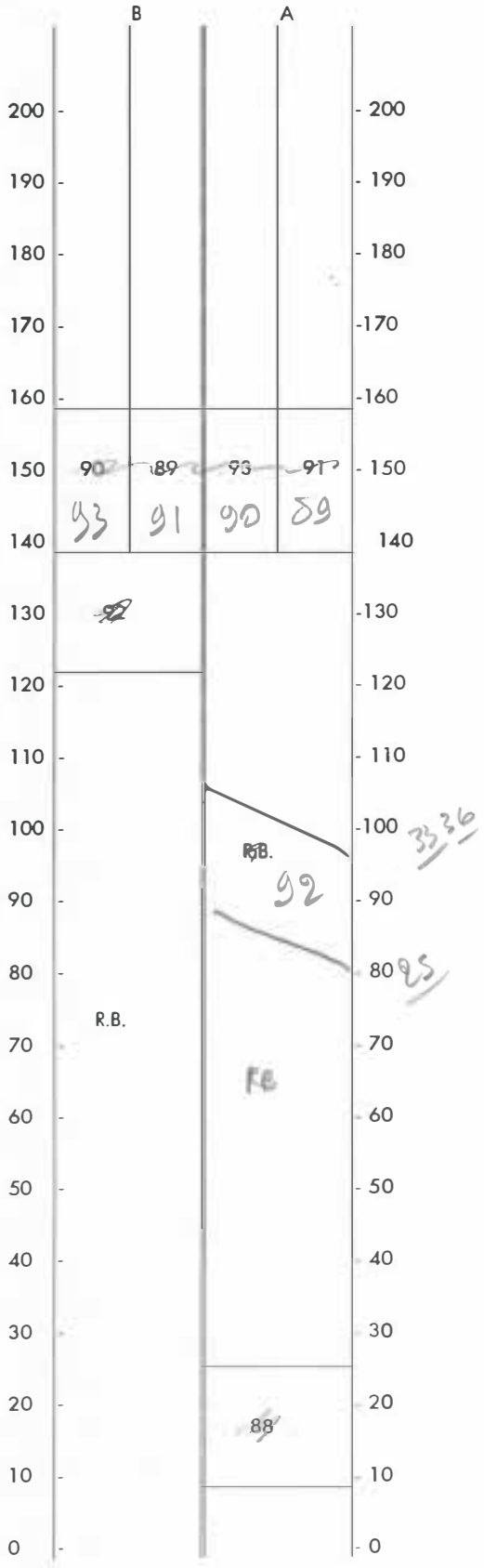


BLOCKS	27	37	38	39	40
Ref. block	27	27	27	27	27
PLANTING	1971	1971	1971	1971	1971
CLONE	GT 1	GT 1	GT 1	GT 1	GT 1
Area (Ha)	32,81	52,21	46,87	65,28	43,53
Stand 1990	429	268	290	380	321
1991	378	249	263	348	293
1992					
Kg/Ha 1990	2057	1410	1554	2019	2327
1991	2113	1431	1551	2114	2668
1992					
Kg/Tree 1990	4,8	5,3	5,4	5,3	7,2
1991	5,6	5,7	5,9	6,1	9,1
1992					
Tapping 1990	UTS	UTS	UTS	UTS	UTS
System 199	UTS	UTS	UTS	UTS	UTS
199	UTS	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N	N
Stim. g/tree	1	1	1	1	1
frequency	8/y	8/y	8/y	8/y	8/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	400	400	400

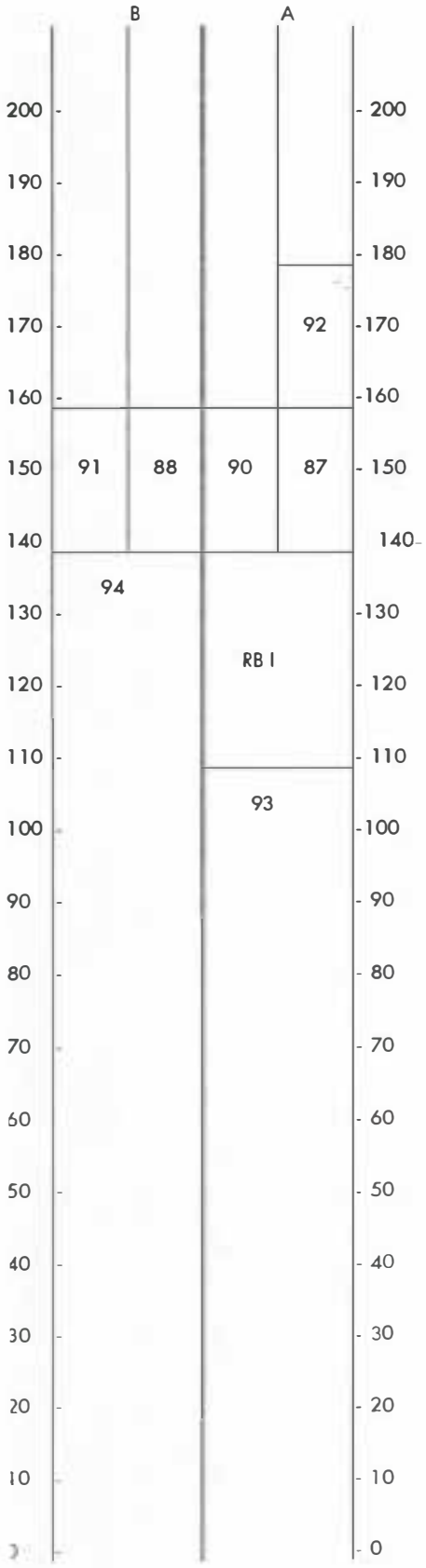
BLOCKS	41	75	76	77	76	77
Ref. block	27	27	27	27	27	27
PLANTING	1971	1971	1971	1971	1972	1972
CLONE	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1
Area (Ha)	55,34	38,82	19,12	38,55	2,29	2,68
Stand 1990	353	307	377	301	303	317
1991	323	276	266	279	287	325
1992						
Kg/Ha 1990	2467	1695	2115	1718	2210	2014
1991	2579	1739	2415	1927	2467	2014
1992						
Kg/Tree 1990	7,0	5,5	5,6	5,7	7,3	6,4
1991	8,0	6,3	9,1	6,9	8,6	6,2
1992						
Tapping 1990	UTS	UTS	UTS	UTS	UTS	UTS
System 199	UTS	UTS	UTS	UTS	UTS	UTS
199	UTS	UTS	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N	N	N
Stim. g/tree	1	1	1	1	1	1
frequency	8/y	8/y	8/y	8/y	8/y	8/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	400	400	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 36 (associated blocks 32-33)
area : 4 ha
clone : GT 1
date of planting : 1972
date of opening : 1979

BLOCKS	32	33	36
Ref. block	36	36	36
PLANTING	1972	1972	1972
CLONE	GT 1	GT 1	GT 1
Area (Ha)	10,20	5,60	3,71
Stand 1990	429		361
1991	485		374
1992			
Kg/Ha 1990	2773		1175
1991	3189		2240
1992			
Kg/Tree 1990	6,5		3,3
1991	6,6		6,0
1992			
Tapping 1990	UTS	UTS	UTS
System 199	UTS	UTS	UTS
199	N	N	N
TS 1993	UTS	UTS	UTS
Stim. g/tree	0,5	0,5	0,5
frequency	13/y	13/y	13/y
% Ethrel	5.0%	5.0%	5.0%
a.i./tree	325	325	325

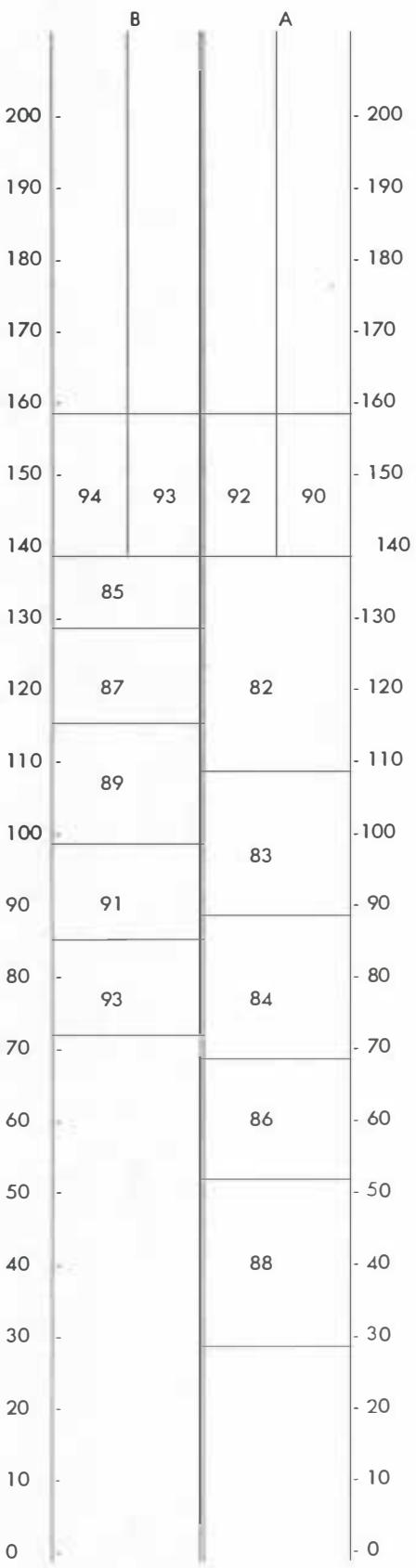


Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENIKE
Block : 13 (associated 25-33-36-72)
area : 62 ha
clone : GT 1
date of planting : 1973
date of opening : 1979



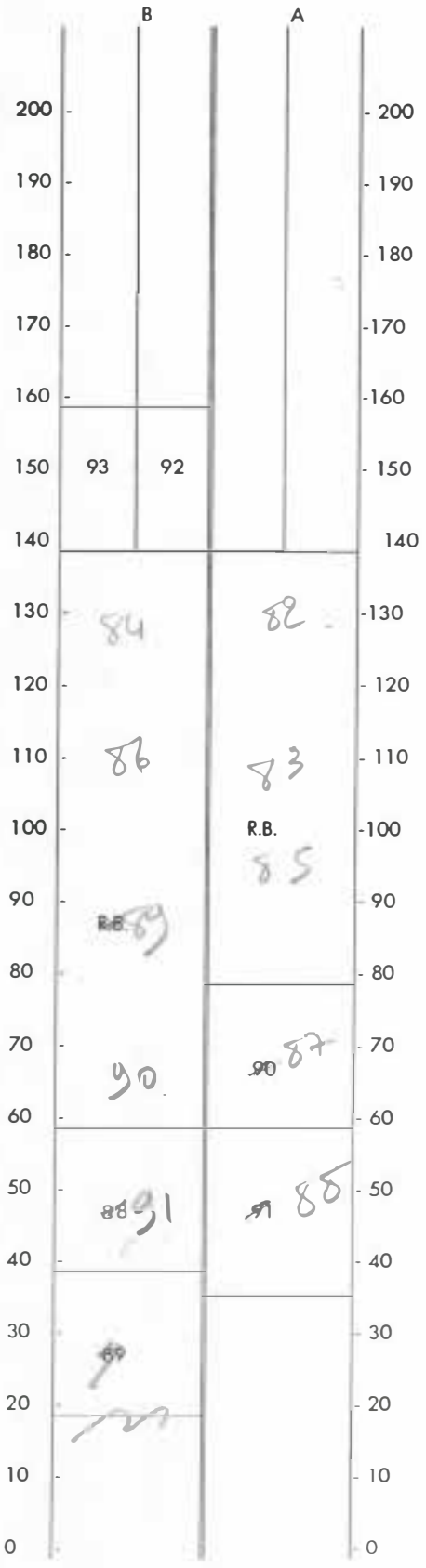
BLOCKS	13	25	33	36	72
Ref. block	13	13	13	13	13
PLANTING	1973	1973	1973	1973	1973
CLONE	GT 1	GT 1	GT 1	GT 1	GT 1
Area (Ha)	61,89	6,39	2,87	8,15	2,80
Stand 1990	359	262	360	239	343
1991	337	151	349	217	327
1992					
Kg/Ha 1990	1597	696	929	2101	1643
1991	1808	679	1149	2147	1741
1992					
Kg/Tree 1990	4,4	2,7	2,6	8,8	4,8
1991	5,4	4,5	3,3	9,9	5,3
1992					
Tapping 1990	UTS	UTS	UTS	UTS	UTS
System 199	UTS	UTS	UTS	UTS	UTS
199	UTS	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8
frequency	10/y	10/y	10/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	400	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENIKE
Block : 14 A (associated 14 : GT 1, 1975)
area : 38 ha
done : GT 1
date of planting : 1974
date of opening : 1980



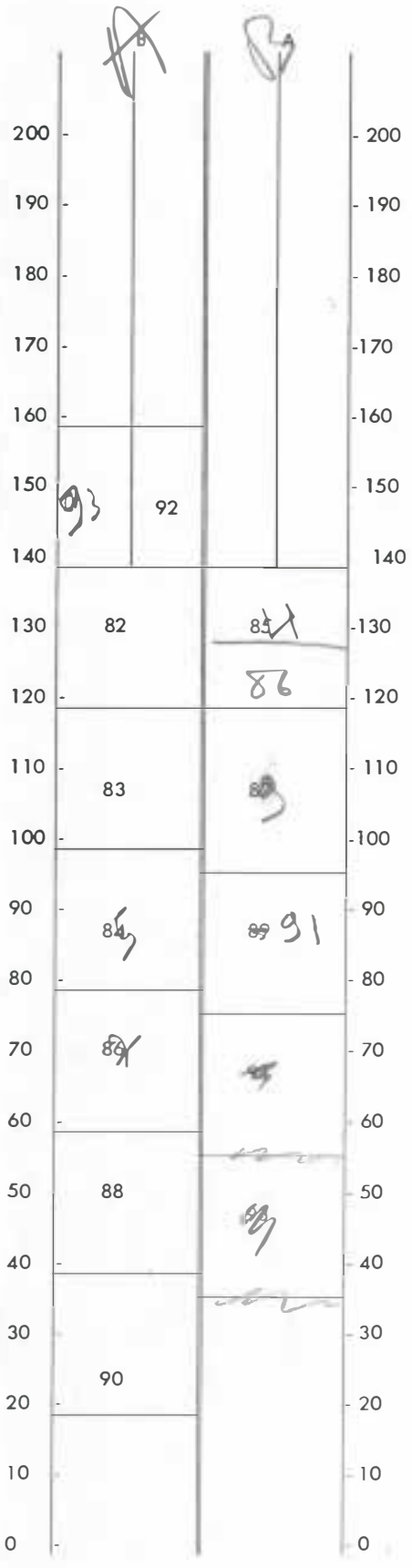
BLOCKS	14	14
Ref. block	14	14
PLANTING	1974	1975
CLONE	GT 1	GT 1
Area (Ha)	37,80	13,19
Stand 1990	395	305
1991	389	287
1992		
Kg/Ha 1990	1701	1285
1991	1817	928
1992		
Kg/Tree 1990	4,3	4,2
1991	4,7	3,2
1992		
Tapping 1990	UTS	UTS
System 199	N	UTS
199	UTS	UTS
TS 1993	N	N
Stim. g/tree	0,8	0,8
frequency	10/y	10/y
% Ethrel	5.0%	5.0%
a.i./tree	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 55 (associated 5-11-12-59)
area : 46 ha
clone : GT 1
date of planting : 1974
date of opening : 1980



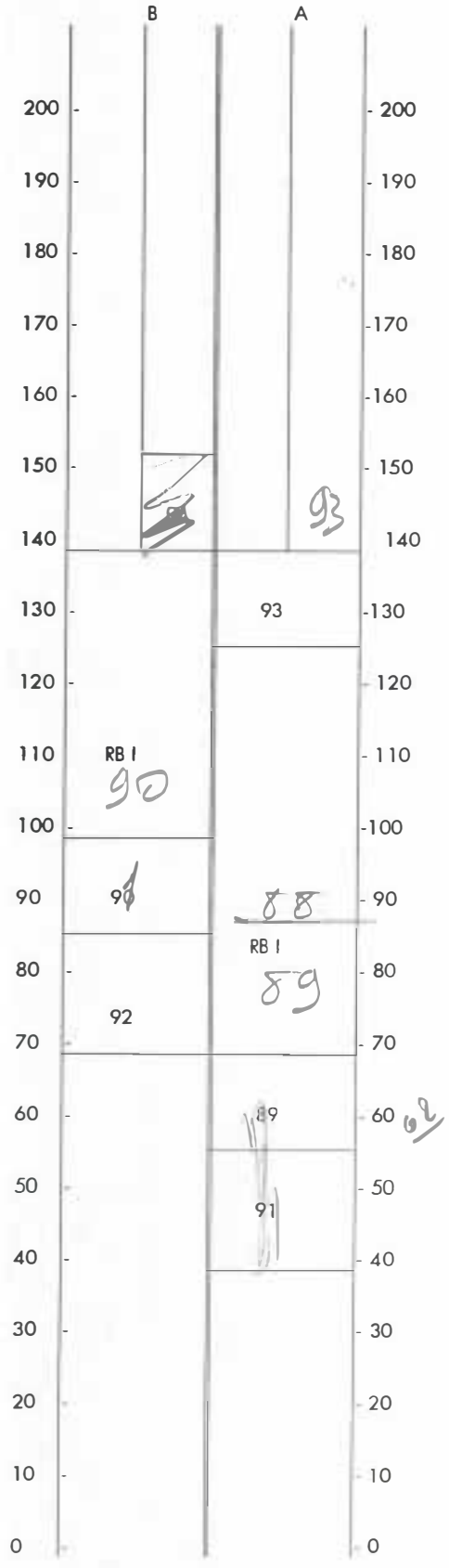
BLOCKS	05	11	12	55	59	12
Ref. block	55	55	55	55	55	55
PLANTING	1974	1974	1974	1974	1974	1979
CLONE	GT 1	GT 1	GT 1	AV 2037	AV 2037	GT 1
Area (Ha)	5,00	25,00	62,20	46,10	24,78	37,76
Stand 1990	360	511	375	357	400	337
1991	348	493	340	318	357	318
1992						
Kg/Ha 1990	1956	2194	1250	1063	1203	1183
1991	1912	2331	1327	1037	1176	1303
1992						
Kg/Tree 1990	5,4	4,3	3,3	3,0	3,0	3,5
1991	5,5	4,7	3,9	3,3	3,3	4,1
1992						
Tapping 1990	N	N	N	N	N	N
System 199	N	N	N	N	N	N
199	UTS	UTS	UTS	UTS	UTS	N
TS 1993	UTS	UTS	UTS	UTS	UTS	UTS
Stim. g/tree	0,4	0,4	0,4	0,4	0,4	0,4
frequency	13/y	13/y	13/y	15/y	15/y	13/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	260	260	260	300	300	260

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 60 (associated blocks 56-57-58-61)
area : 35 ha
clone : GT 1
date of planting : 1975
date of opening : 1982



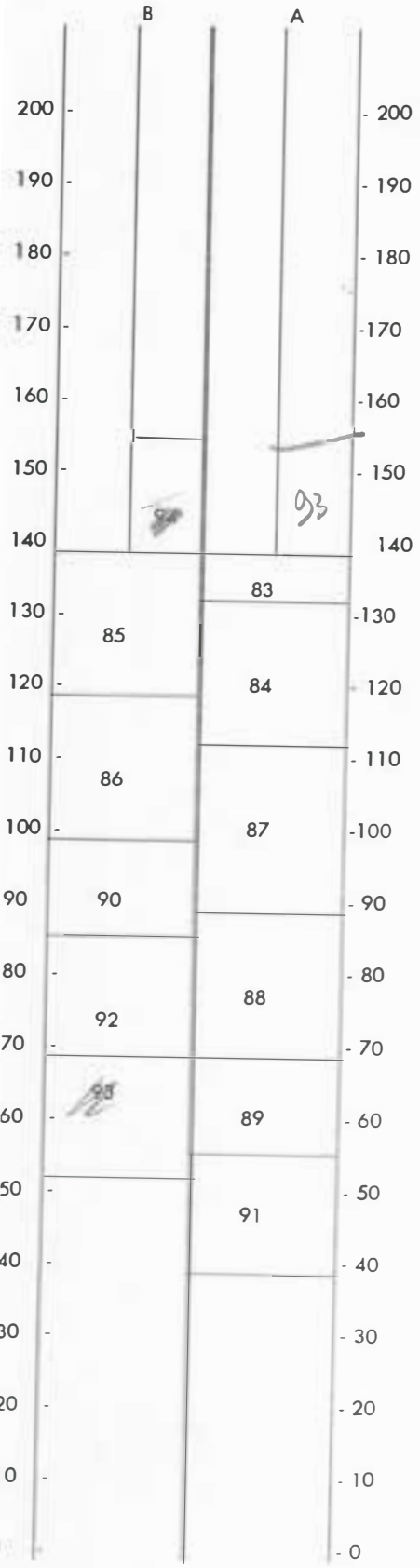
BLOCKS	58	56	57	58	60	61
Ref. block	60	60	60	60	60	60
PLANTING	1974	1975	1975	1975	1975	1975
CLONE	AV 2037	GT 1	GT 1	GT 1	GT 1	GT 1
Area (Ha)	47,82	50,37	33,56	12,42	35,66	40,75
Stand 1990	367	336	199	240	286	347
1991	358	344	180	233	272	309
1992						
Kg/Ha 1990	1546	1175	725	827	1168	1328
1991	1417	1058	661	763	1077	1354
1992						
Kg/Tree 1990	4,2	3,5	3,6	3,4	4,1	3,8
1991	4,0	3,1	3,7	3,3	4,0	4,4
1992						
Tapping 1990	N	N	N	N	N	N
System 199	N	N	N	N	N	N
199	UTS	UTS	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8
frequency	12/y	10/y	10/y	10/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	480	400	400	400	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 62 (associated block 63)
area : 45 h
done : GT 1
date of planting : 1978
date of opening : 1983



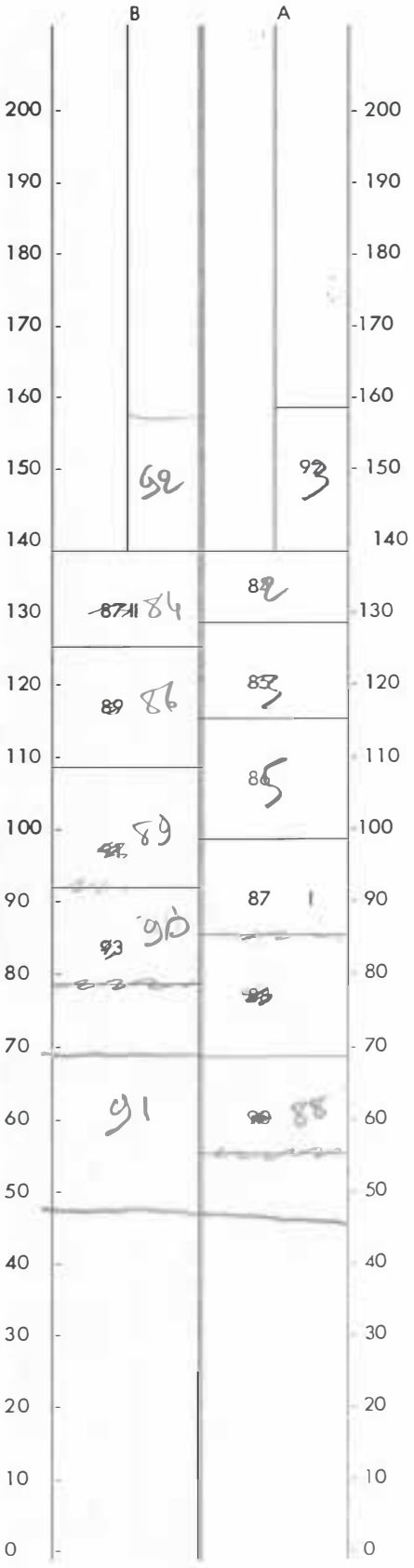
BLOCKS	62	63
Ref. block	62	62
PLANTING	1978	1978
CLONE	GT 1	GT 1
Area (Ha)	44,73	56,18
Stand 1990	338	250
1991	329	236
1992		
Kg/Ha 1990	1512	1059
1991	1210	913
1992		
Kg/Tree 1990	4,5	4,2
1991	3,7	3,9
1992		
Tapping 1990	N	N
System 199	N	N
199	N	N
TS 1993	N	N
Stim. g/tree	0,8	0,8
frequency	10/y	10/y
% Ethrel	5.0%	5.0%
a.i./tree	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 64
area : 33 ha
clone : AV 2037 = 15 ha - PR 107 = 18 ha
date of planting : 1978
date of opening : 1983



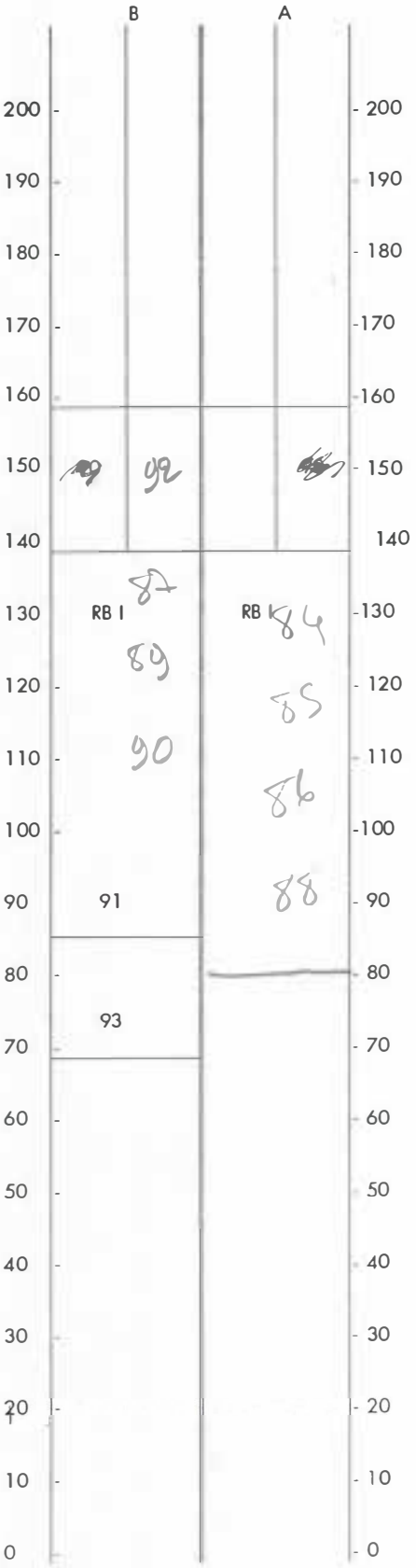
BLOCKS	64	64
Ref. block	64	64
PLANTING	1978	1978
CLONE	AV 2037	PR 107
Area (Ha)	15,66	18,64
Stand 1990	439	331
1991	402	378
1992		
Kg/Ha 1990	1582	1924
1991	1637	1888
1992		
Kg/Tree 1990	3,6	5,8
1991	4,1	5,0
1992		
Tapping 1990	N	N
System 199	N	N
199	N	N
TS 1993	N	N
Stim. g/tree	0,8	0,8
frequency	12/y	10/y
% Ethrel	5.0%	5.0%
a.i./tree	480	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 14 (associated blocks : 59-60-63-64)
area : 14 ha
clone : GT 1
date of planting : 1979
date of opening : 1984



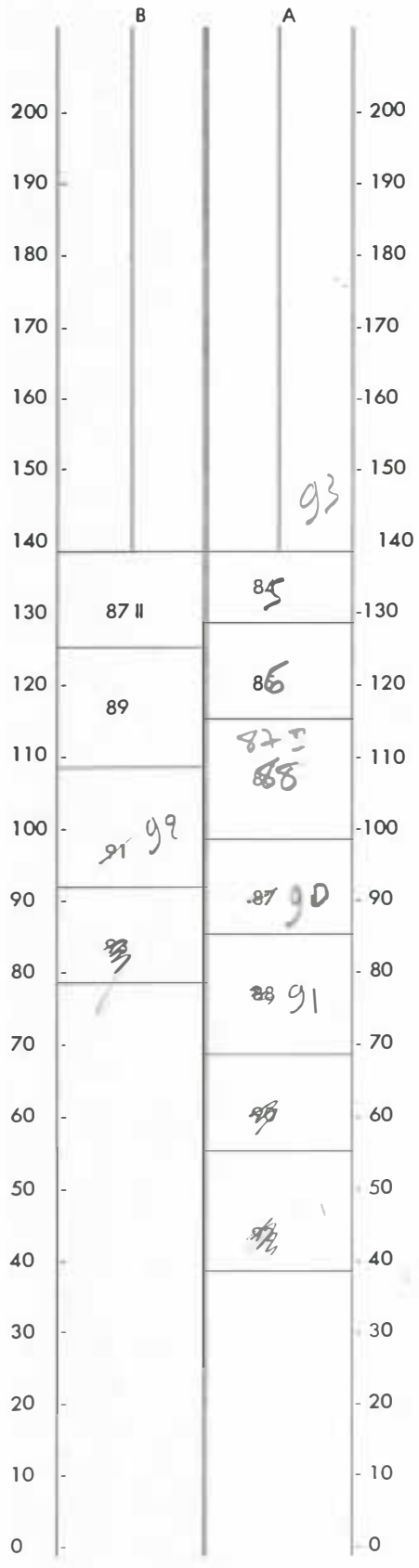
BLOCKS	59	60	63	64
Ref. block	14	14	14	14
PLANTING	1979	1979	1979	1979
CLONE	GT 1	GT 1	GT 1	GT 1
Area (Ha)	0,53	13,70	12,96	0,62
Stand 1990	170	197	141	447
1991	162	218	136	371
1992				
Kg/Ha 1990	1232	1000	739	1161
1991	1290	1006	711	1050
1992				
Kg/Tree 1990	7,3	5,1	5,3	2,6
1991	8,0	4,6	5,2	2,8
1992				
Tapping 1990	N	N	N	N
System 199	N	N	N	N
199	UTS	UTS	UTS	UTS
TS 1993	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8
frequency	10/y	10/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	400	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 14 B
area : 14 ha
clone : PR 107
date of planting : 1979
date of opening : 1984



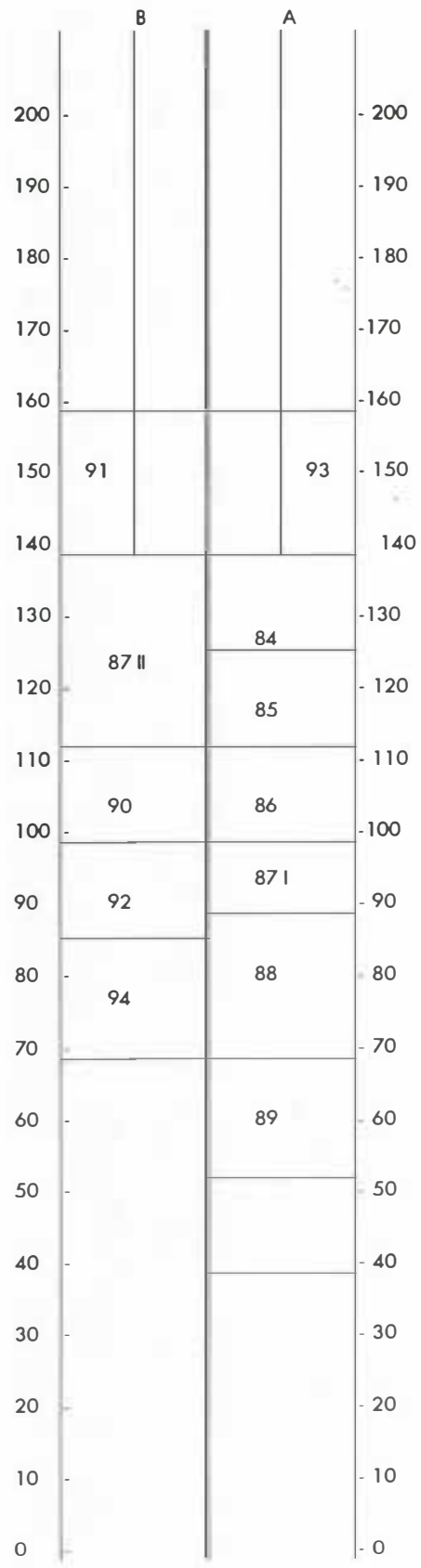
BLOCKS	14
Ref. block	14
PLANTING	1979
CLONE	PR 107
Area (Ha)	13,98
Stand 1990	294
1991	288
1992	
Kg/Ha 1990	1002
1991	1127
1992	
Kg/Tree 1990	3,4
1991	3,9
1992	
Tapping 1990	UTS
System 199	N
199	UTS
TS 1993	N
Stim. g/tree	0,8
frequency	10/y
% Ethrel	5.0%
a.i./tree	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 61
area : 12 ha
done : GT 1
date of planting : 1979
date of opening : 1984



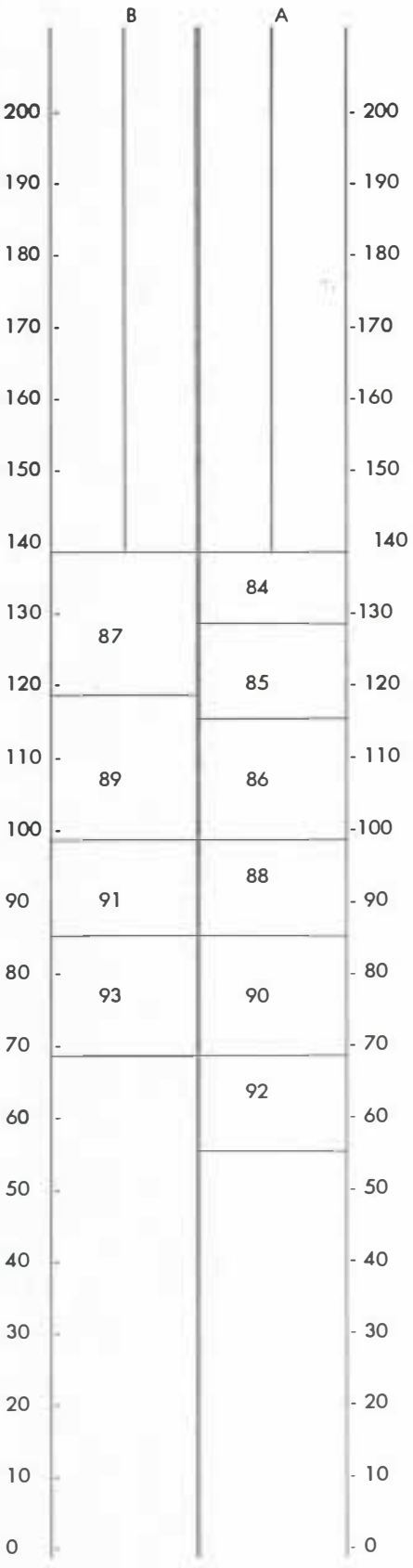
BLOCKS	61
Ref. block	61
PLANTING	1979
CLONE	GT 1
Area (Ha)	11,95
Stand 1990	269
1991	244
1992	
Kg/Ha 1990	1054
1991	941
1992	
Kg/Tree 1990	3,9
1991	3,9
1992	
Tapping 1990	N
System 199	N
199	N
TS 1993	N
Stim. g/tree	0,8
frequency	10/y
% Ethrel	5.0%
a.i./tree	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 68 (associated block : part of 65)
area : 25.30 ha
done : AV 2037
date of planting : 1979
date of opening : 1984



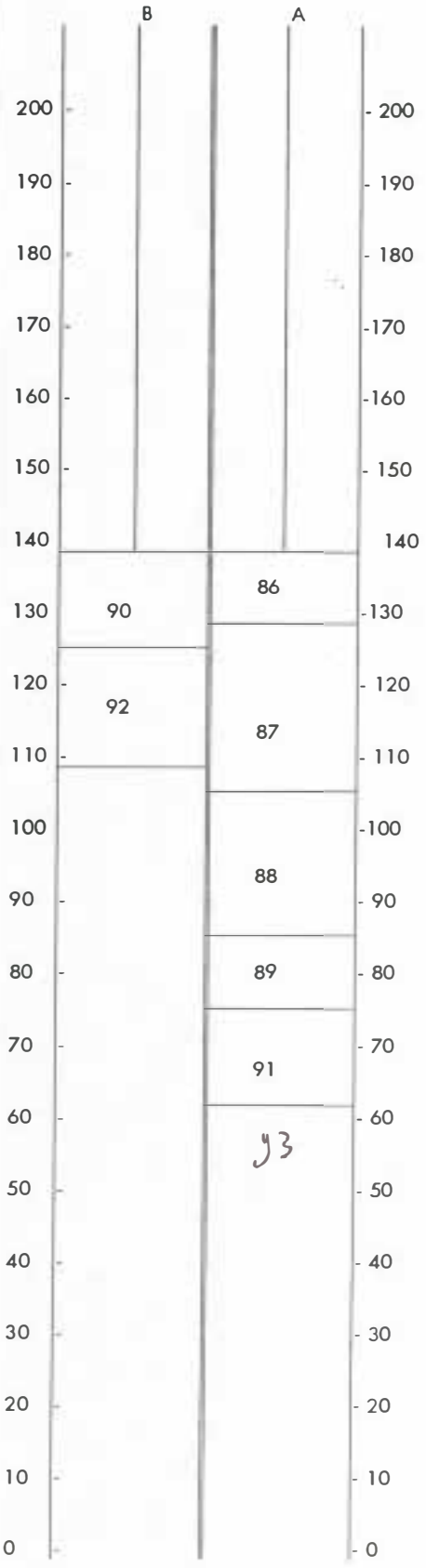
BLOCKS	65	68
Ref. block	68	68
PLANTING	1979	1979
CLONE	AV 2037	~~PR 107~~ AV 2037
Area (Ha)	10,27	25,30
Stand 1990	388	267
1991	372	263
1992		
Kg/Ha 1990	1545	1145
1991	1258	989
1992		
Kg/Tree 1990	4,0	4,3
1991	3,4	3,8
1992		
Tapping 1990	N	N
System 1991	UTS	N
1991	N	N
TS 1993	UTS	UTS
Stim. g/tree	0,4	0,4
frequency	15/y	13/y
% Ethrel	5.0%	5.0%
a.i./tree	300	260

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 78 (associated blocks 79 - part of 80)
area : 13.8 ha
done : PR 107
date of planting : 1979
date of opening : 1984



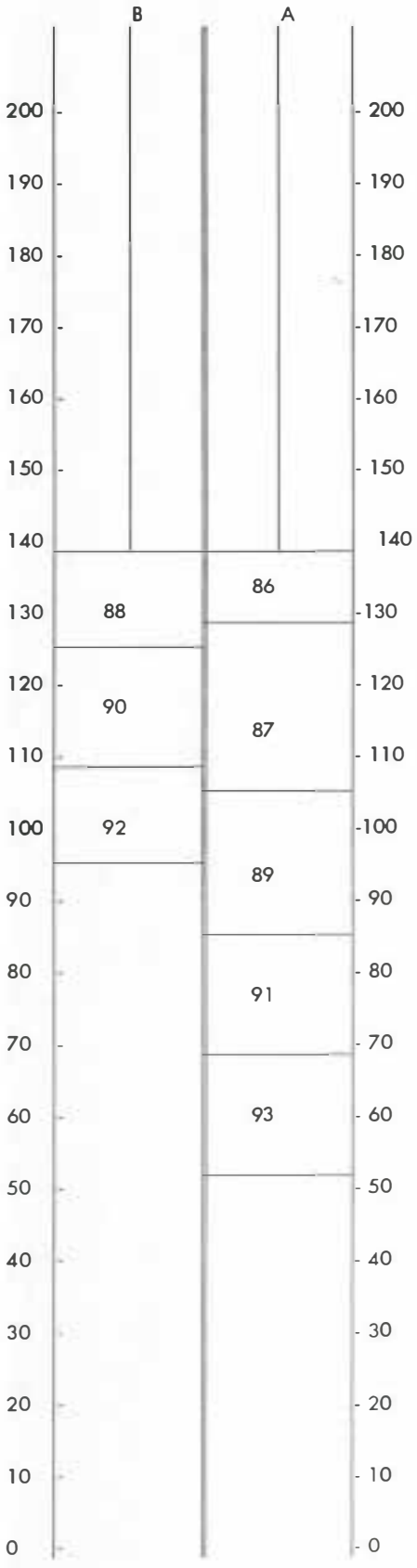
BLOCKS	78	79	80
Ref. block	78	78	78
PLANTING	1979	1980	1981
CLONE	~~GT 1~~ PR 107	PR 107	PR 107
Area (Ha)	13,75	22,75	21,07
Stand 1990	400	400	373
1991	372	410	348
1992			
Kg/Ha 1990	1785	1621	1135
1991	1347	1661	1062
1992			
Kg/Tree 1990	4,5	4,1	3,0
1991	3,6	4,1	3,1
1992			
Tapping 1990	N	N	N
System 199	N	N	N
199	N	N	N
TS 1993	N	N	N
Stim. g/tree	0,8	0,8	0,8
frequency	10/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%
a.i./tree	400	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 8 (associated 47 - 50)
area : 5 ha
done : GT 1
date of planting : 1980
date of opening : 1986



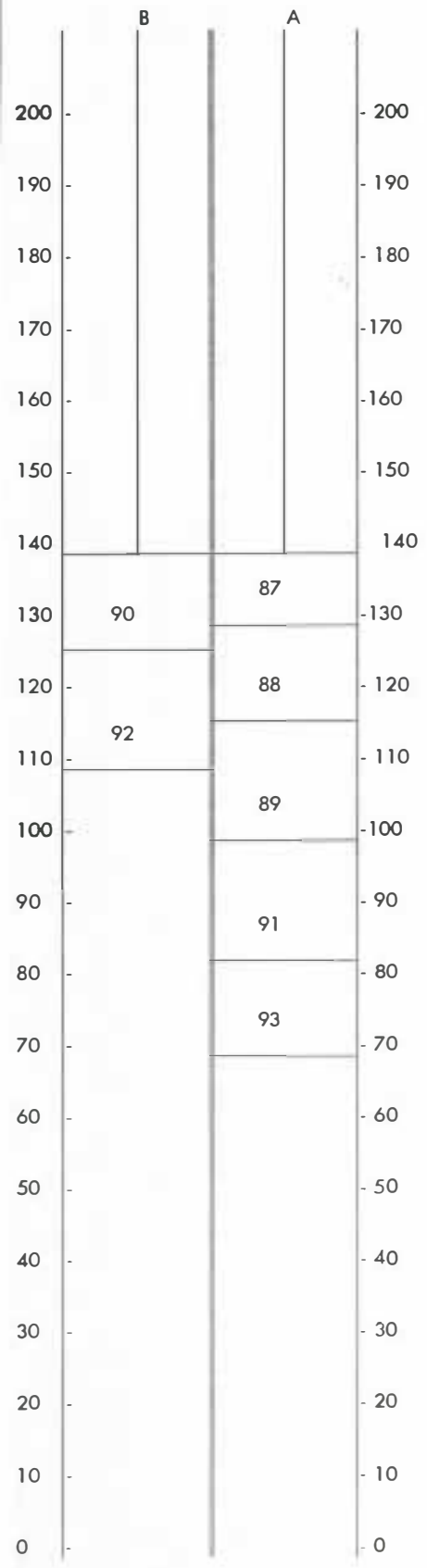
BLOCKS	08	47	50
Ref. block	8	8	8
PLANTING	1980	1980	1980
CLONE	GT 1	GT 1	GT 1
Area (Ha)	5,00	45,55	2,90
Stand 1990	342	344	148
1991	316	345	110
1992			
Kg/Ha 1990	1666	1290	487
1991	1643	1544	678
1992			
Kg/Tree 1990	4,9	3,7	3,3
1991	5,2	4,5	6,2
1992			
Tapping 1990	N	N	N
System 199	N	N	N
199	N	N	N
TS 1993	N	N	N
Stim. g/tree	0,8	0,8	0,8
frequency	10/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%
a.i./tree	400	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 81 (associated 82)
area : 44 ha
clone : GT 1
date of planting : 1981
date of opening : 1986



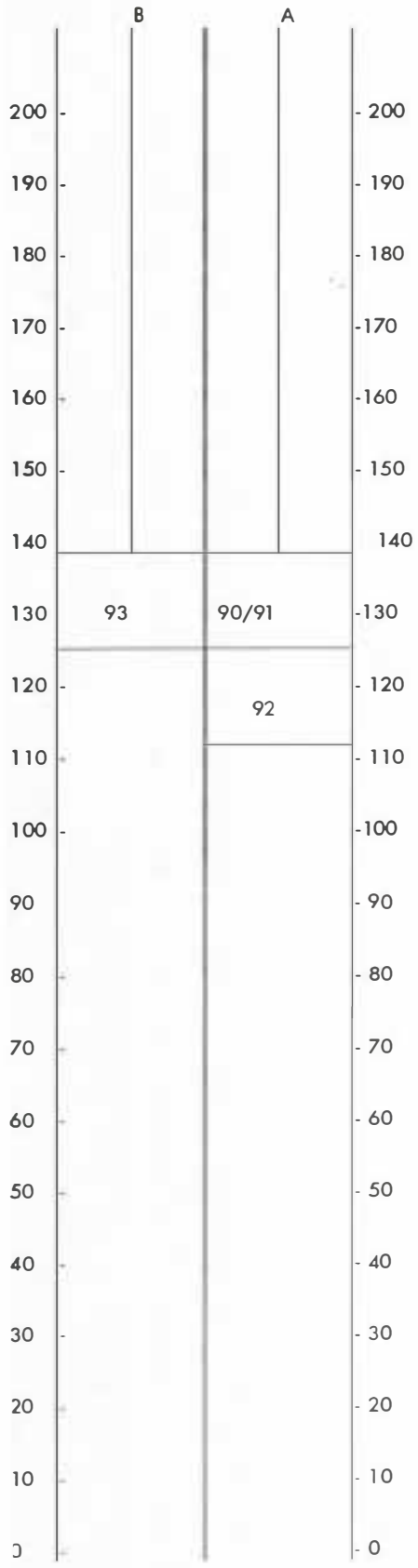
BLOCKS	81	82
Ref. block	81	81
PLANTING	1981	1981
CLONE	GT 1	GT 1
Area (Ha)	44,36	29,08
Stand 1990	410	391
1991	402	421
1992		
Kg/Ha 1990	1503	1257
1991	1516	1302
1992		
Kg/Tree 1990	3,7	3,2
1991	3,8	3,1
1992		
Tapping 1990	N	N
System 199	N	N
199	N	N
TS 1993	N	N
Stim. g/tree	0,8	0,8
frequency	10/y	10/y
% Ethrel	5.0%	5.0%
a.i./tree	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 4 (associated 6-80-82)
area : 68 ha
done : GT1 = 32 ha - AV 2037 = 36 ha
date of planting : 1982
date of opening : 1987



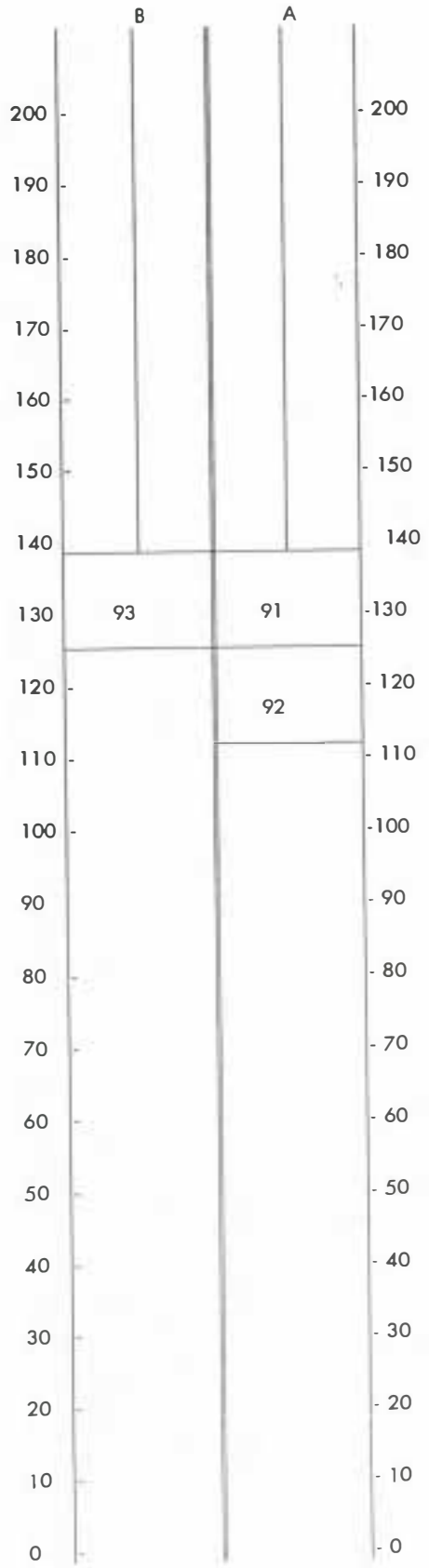
BLOCKS	04	04	06	80	82
Ref. block	4	4	4	4	4
PLANTING	1982	1982	1982	1982	1982
CLONE	GT 1	AV 2037	GT 1	GT 1	GT 1 PB 107
Area (Ha)	32,00	36,00	2,00	6,00	11,06
Stand 1990	315	313	368	423	412
1991	313	312	419	365	415
1992					
Kg/Ha 1990	1148	1148	1332	1606	1432
1991	1528	1500	1923	1276	1457
1992					
Kg/Tree 1990	3,6	3,7	3,6	3,8	3,5
1991	4,9	4,8	4,6	3,5	3,5
1992					
Tapping 1990	N	N	N	N	N
System 199	N	N	N	N	N
199	N	N	N	N	N
TS 1993	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8
frequency	10/y	12/y	10/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%	5.0%	5.0%
a.i./tree	400	480	400	400	400

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 9 (associated blocks 10-15-83)
area : 49 ha
clone : PB 235
date of planting : 1985
date of opening : March 1990



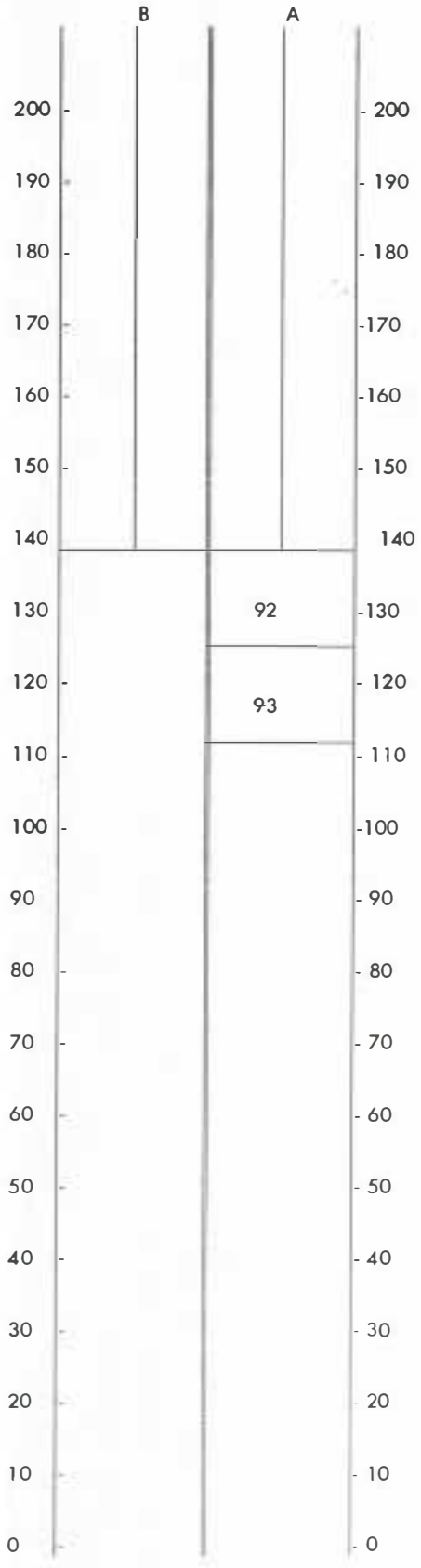
BLOCKS	15	15	83	09	10
Ref. block	9	9	9	9	9
PLANTING	1984	1984	1984	1985	1985
CLONE	GT 1	GT 1	GT 1	PB 235	PB 260
Area (Ha)	6,00	6,00	4,00	49,36	44,29
Stand 1990	204	139	418	251	383
1991	204	204	375	342	383
1992					
Kg/Ha 1990	241	241	1046	313	517
1991	749	749	1180	1295	1705
1992					
Kg/Tree 1990	1,2	1,7	2,5	1,2	1,3
1991	3,7	3,7	3,1	3,8	4,5
1992					
Tapping 1990	N	N	N	N	N
System 199	N	N	N	N	N
199	N	N	N	N	N
TS 1993	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8
frequency	12/y	12/y	12/y	5/y	5/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	240	240	240	100	100

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 48 (associated blocks 52-53-84-85-86-87)
area : 30 ha
clone : PB 235
date of planting : 1986
date of opening : 1991



BLOCKS	52	53	48	84	85	86	87
Ref. block	48	48	48	48	48	48	48
PLANTING	1985	1985	1986	1986	1986	1986	1986
CLONE	PR 255	PR 261	PB 235	PB 260	PB 260	PB 260	PB 235
Area (Ha)	41,55	26,80	30,00	46,07	45,62	48,54	59,77
Stand 1990	0	0	0	0	0	0	0
1991	204	256	328	186	210	191	208
1992							
Kg/Ha 1990	0	0	0	0	0	0	0
1991	432	949	1236	331	402	322	408
1992							
Kg/Tree 1990	0,0	0,0	0,0	0,0	0,0	0,0	0,0
1991	2,1	3,7	3,8	1,8	1,9	1,7	2,0
1992							
Tapping 1990	0	0	0	0	0	0	0
System 199	N	N	N	N	N	N	N
199	N	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,7	0,7	0,7	0,7	0,7
frequency	12/y	5/y	4/y	4/y	4/y	4/y	4/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	240	100	70	70	70	70	70

Date of visit : 1/6/92
Name of the plantations : AEK - PAMIENKE
Block : 3 (associated blocks 7-8-9-44-88-89-90-91)
area : 2 ha
done : PB 235
date of planting : 1987
date of opening : March 1990



BLOCKS	03	07	08	09	44	88	89	90	91
Ref. block	3	3	3	3	3	3	3	3	3
PLANTING	1987	1987	1987	1987	1987	1987	1987	1987	1987
CLONE	PB 235	PB 235	PB 235	PB 235	PB 260	PB 260	PB 260	PB 260	PB 260
Area (Ha)	2,25	45,17	69,59	5,10	40,55	47,43	39,15	25,56	28,25
Stand 1990	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992									
Kg/Ha 1990	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0
1992									
Kg/Tree 1990	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
1991	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
1992									
Tapping 1990	0	0	0	0	0	0	0	0	0
System 199	0	0	0	0	0	0	0	0	0
199	N	N	N	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N	N	N	N
Stim. g/tree	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7	0,7
frequency	4/y	4/y	4/y	4/y	4/y	4/y	4/y	4/y	4/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	70	70	70	70	70	70	70	70	70

HALIMBE

Production in the 80 to 84 plantings (figure 10) is satisfactory, except in the following blocks:

No. 7	: Excessive consumption on GT 1 in the middle of the panel
No. 16	: Many additional openings and leaf diseases.
Nos. 3-4-11-12	: ditto

Blocks 25-30 and 32 (PR 261) are in their first tapping year.

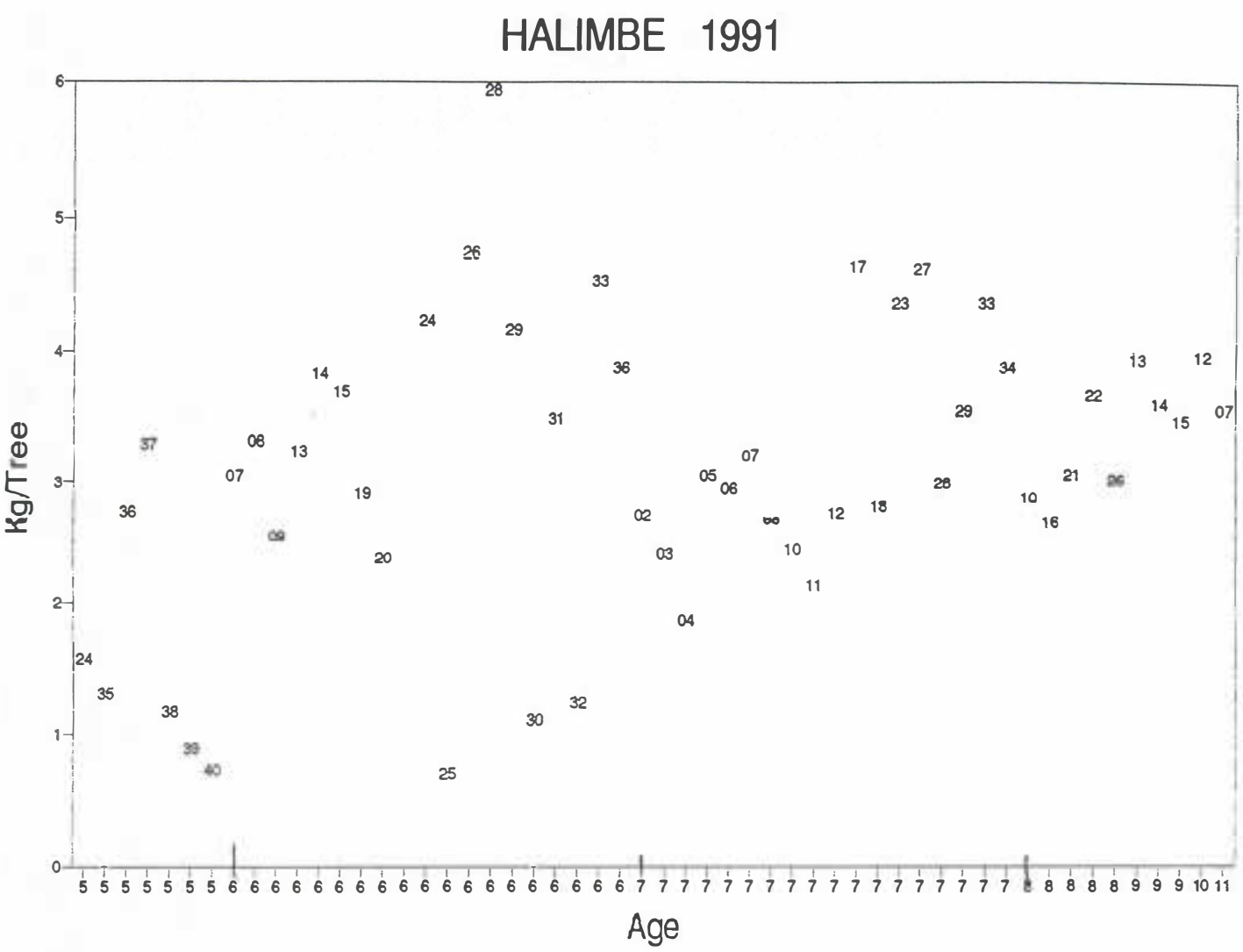
Worth noting is the good production in blocks 24-26-28-29 and 33 (PB 260).

On the whole, the foliage is in good condition, except in block 16 and BPM 24.

There is corticium in some plots. Bark necrosis should not be confused with accidental wounds.

The areas of blocks 35 (PR 261) and 32 (BPM 24) should be reviewed.

FIGURE N° 10

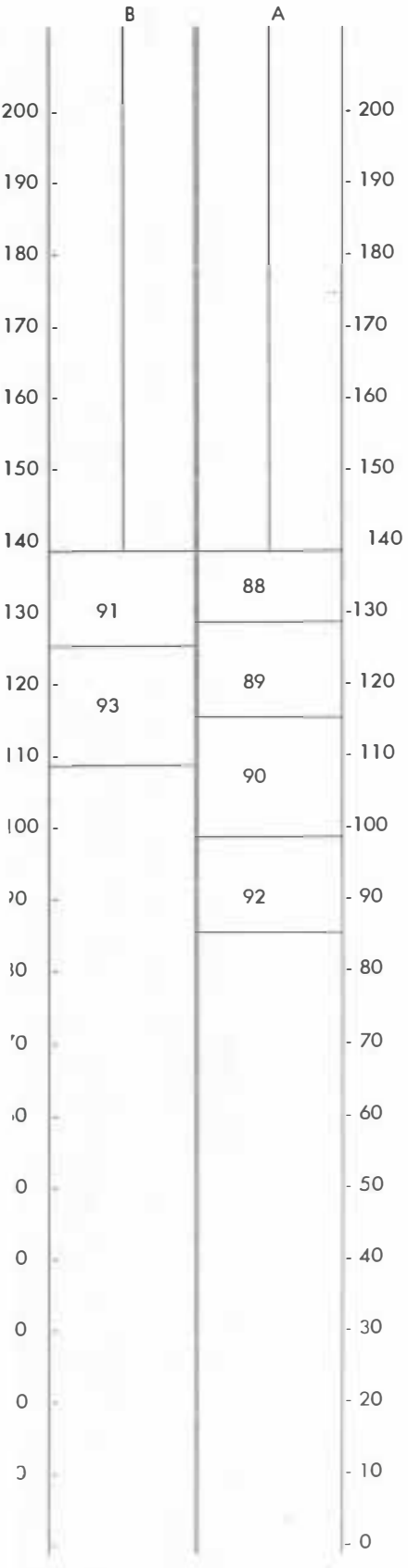

HALIMBE 1991
Kg/Tree
Age
0
1
2
3
4
5
6
5 5 5 5 5 5 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 8 8 8 8 8 9 9 9 10 11

HALIMBE

BLOCK	Ref. block	Planting Year	CLONE	Area Ha	Tapping 1992	System 1993
02	2	1984	GT 1	36,00	N	N
03	3	1984	GT 1	25,70	N	N
04	3	1984	GT 1	18,24	N	N
05	3	1984	GT 1	17,20	N	N
06	2	1984	GT 1	18,45	N	N
07	7	1980	GT 1	13,29	N	N
07	2	1984	GT 1	18,44	N	N
07	8	1985	PB 260	2,93	N	N
08	3	1984	GT 1	20,60	N	N
08	8	1985	PB 260	17,76	N	N
09	8	1985	PB 235	52,91	N	N
10	2	1983	GT 1	20,00	N	N
10	2	1984	GT 1	10,00	N	N
11	3	1984	GT 1	5,00	N	N
12	12	1981	GT 1	34,80	N	N
12	3	1984	GT 1	4,00	N	N
13	13	1982	GT 1	18,45	N	N
13	8	1985	PB 235	4,02	N	N
14	13	1982	GT 1	24,22	N	N
14	8	1985	PB 235	7,26	N	N
15	13	1982	GT 1	26,80	N	N
15	8	1985	PB 235	4,89	N	N
16	16	1983	GT 1	14,00	N	N
17	2	1984	PB 260	27,90	N	N
18	2	1984	GT 1	28,50	N	N
19	8	1985	PB 235	8,66	N	N
20	8	1985	BPM 1	27,18	N	N
21	16	1983	GT 1	29,02	N	N
22	16	1983	GT 1	34,65	N	N

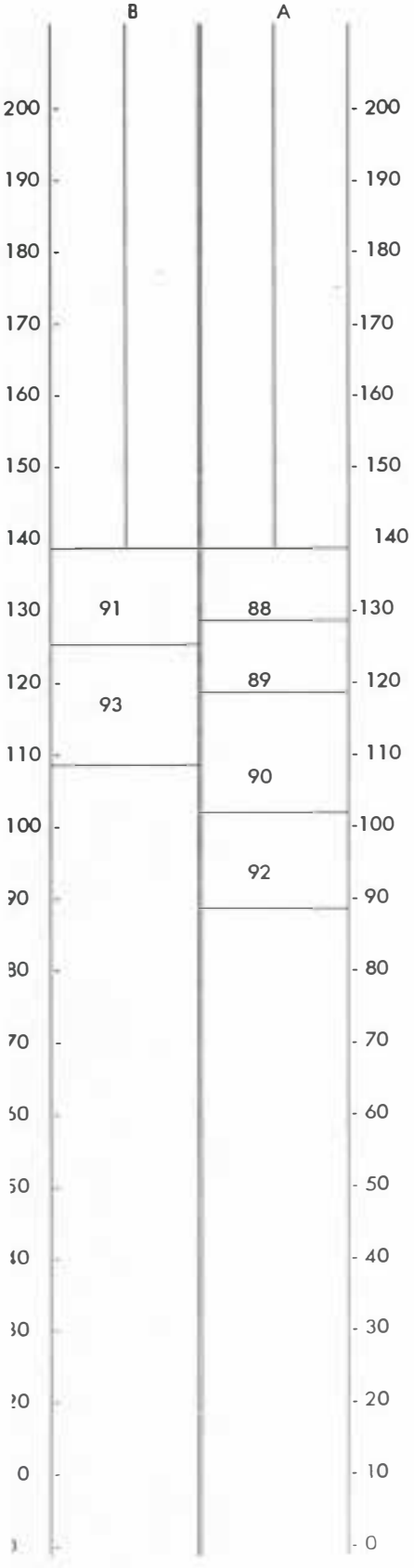
23	2	1984	PB 235	24,70	N	N
23	8	1985	PB 260	0,90	N	N
24	8	1985	PB 260	18,20	N	N
24	25	1986	PB 260	20,43	N	N
25	25	1985	PR 261	13,80	N	N
26	2	1983	AV 2037	16,80	N	N
26	8	1985	PB 260	10,80	N	N
27	2	1984	PR 261	31,60	N	N
28	2	1984	GT 1	33,07	N	N
28	8	1985	PB 260	6,99	N	N
29	2	1984	GT 1	33,46	N	N
29	8	1985	PB 260	10,15	N	N
30	25	1985	PR 261	23,91	N	N
31	25	1985	PR 261	25,38	N	N
32	25	1985	PR 261	50,23	N	N
33	2	1984	PR 261	21,17	N	N
33	8	1985	PB 260	11,96	N	N
34	2	1984	GT 1	16,43	N	N
35	35	1986	BPM 1	49,93	N	N
35	25	1986	PR 261	12,90	N	N
36	8	1985	PB 260	14,45	N	N
36	25	1986	PB 260	19,94	N	N
37	25	1986	PB 235	45,60	N	N
38	25	1986	PB 260	35,16	N	N
39	25	1986	PB 260	38,33	N	N
40	25	1986	PB 260	24,86	N	N

Date of visit : 3/6/92
Name of the plantations : HAUMBE
Block : 13 (associated blocks 14-15)
area : 19 ha
clone : GT 1
date of planting : 1982
date of opening : 1988



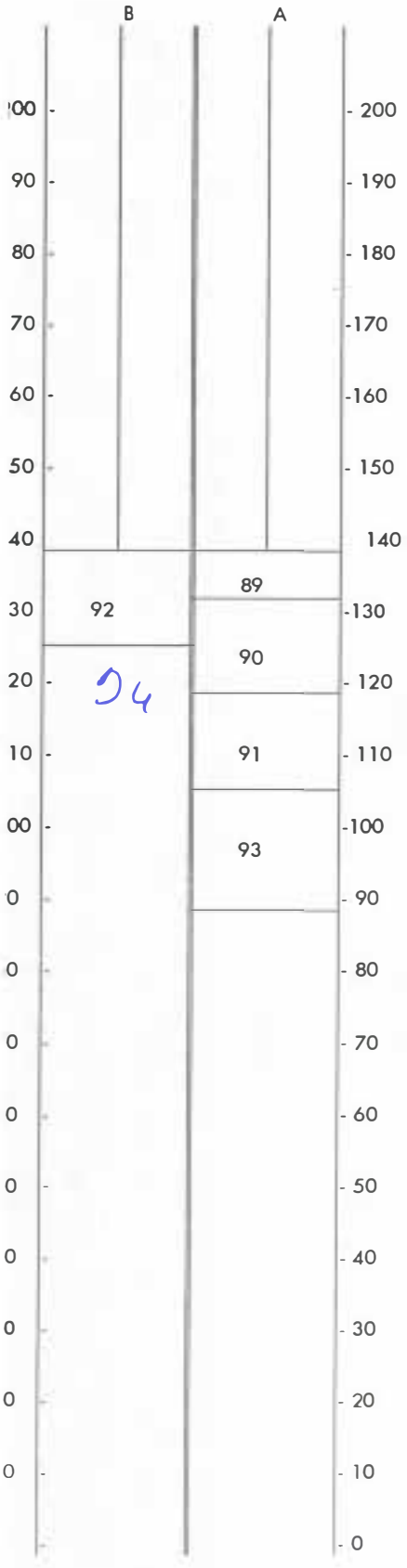
BLOCKS	13	14	15
Ref. block	13	13	13
PLANTING	1982	1982	1982
CLONE	GT 1	GT 1	GT 1
Area (Ha)	18,45	24,22	26,80
Stand 1990	225	302	184
1991	238	320	246
1992			
Kg/Ha 1990	533	642	437
1991	936	1149	852
1992			
Kg/Tree 1990	2,4	2,1	2,4
1991	3,9	3,6	3,5
1992			
Tapping 1990	N	N	N
System 199	N	N	N
199	N	N	N
TS 1993	N	N	N
Stim. g/tree	0,8	0,8	0,8
frequency	10/y	10/y	10/y
% Ethrel	5.0%	5.0%	5.0%
a.i./tree	400	400	400

Date of visit : 3/6/92
Name of the plantations : HALINMBE
Block : 16 (associated 21 - 22)
area : 14 ha
clone : GT 1
date of planting : 1983
date of opening : 1988



BLOCKS	16	21	22
Ref. block	16	16	16
PLANTING	1983	1983	1983
CLONE	GT 1	GT 1	GT 1
Area (Ha)	14,00	29,02	34,65
Stand 1990	227	117	179
1991	339	218	272
1992			
Kg/Ha 1990	207	256	405
1991	890	664	996
1992			
Kg/Tree 1990	0,9	2,2	2,3
1991	2,6	3,0	3,7
1992			
Tapping 1990	N	N	N
System 199	N	N	N
199	N	N	N
TS 1993	N	N	N
Stim. g/tree	0,8	0,8	0,8
frequency	12/y	12/y	12/y
% Ethrel	2.5%	2.5%	2.5%
a.i./tree	240	240	240

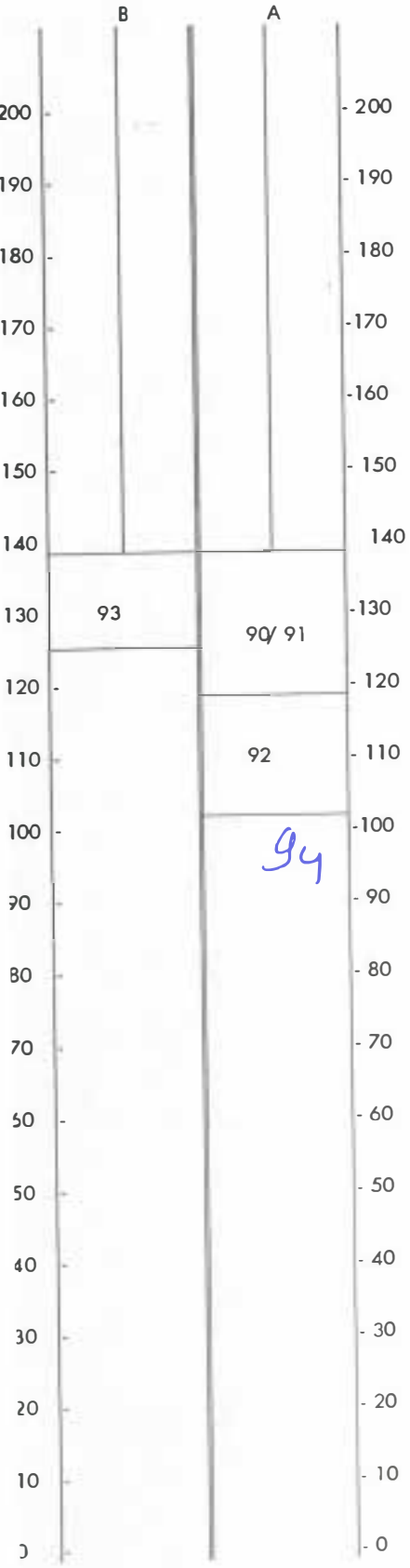
Date of visit : 3/6/92
Name of the plantations : HALIMBE
Block : 2 (associated blocks 6-7-10-17-18-23-26-27-28-29-33-34)
Area : 36 ha
Zone : GT 1
Date of planting : 1984
Date of opening : 1989



BLOCKS	10	26	02	06	07	10	17
Ref. block	2	2	2	2	2	2	2
PLANTING	1983	1983	1984	1984	1984	1984	1984
CLONE	GT 1	AV 2037	GT 1	GT 1	GT 1	GT 1	PB 260
Area (Ha)	20,00	16,80	36,00	18,45	18,44	10,00	27,90
Stand 1990	210	175	129	146	158	262	206
1991	270	186	206	280	209	205	263
1992							
Kg/Ha 1990	386	324	295	313	305	335	771
1991	773	559	561	824	670	491	1223
1992							
Kg/Tree 1990	1,8	1,9	2,3	2,1	1,9	1,3	3,7
1991	2,9	3,0	2,7	2,9	3,2	2,4	4,7
1992							
Tapping 1990	N	N	N	N	N	N	N
System 199	N	N	N	N	N	N	N
199	N	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8	0,8
frequency	12/y	9/y	12/y	12/y	12/y	12/y	5/y
% Ethrel	2.5%	5.0%	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	240	360	240	240	240	240	100

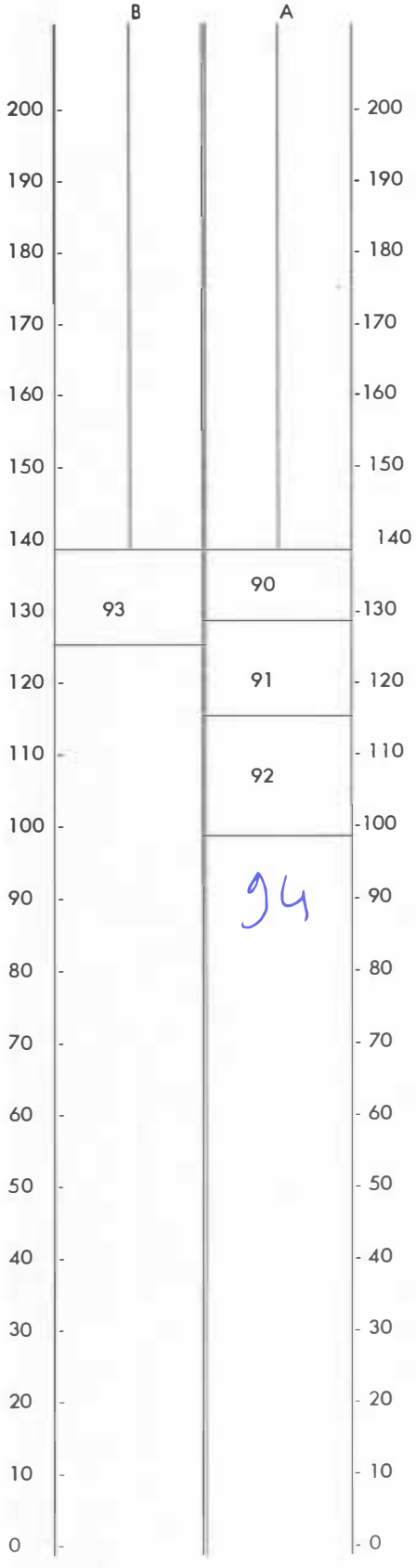
BLOCKS	18	23	27	28	29	33	34
Ref. block	2	2	2	2	2	2	2
PLANTING	1984	1984	1984	1984	1984	1984	1984
CLONE	GT 1	PB 235	PR 261	GT 1	GT 1	PR 261	GT 1
Area (Ha)	28,50	24,70	31,60	33,07	33,46	21,17	16,43
Stand 1990	137	266	149	291	253	88	302
1991	272	262	186	330	256	163	299
1992							
Kg/Ha 1990	227	742	355	566	621	169	519
1991	759	1145	862	985	909	712	1157
1992							
Kg/Tree 1990	1,7	2,8	2,4	1,9	2,5	1,9	1,7
1991	2,8	4,4	4,6	3,0	3,6	4,4	3,9
1992							
Tapping 1990	N	N	N	N	N	N	N
System 199	N	N	N	N	N	N	N
199	N	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8	0,8
frequency	12/y	5/y	5/y	12/y	12/y	5/y	12/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	240	100	100	240	240	100	240

ate of visit : 3/6/92
lame of the plantations : HALIMBE
lock : 3 (associated blocks 4 - 5 - 8 - 11 - 12)
rea : 25 ha
lone : GT 1
ate of planting : 1984
late of opening : 1990



BLOCKS	03	04	05	08	11	12
Ref. block	3	3	3	3	3	3
PLANTING	1984	1984	1984	1984	1984	1984
CLONE	GT 1	GT 1	GT 1	GT 1	GT 1	GT 1
Area (Ha)	25,70	18,24	17,20	20,60	5,00	4,00
Stand 1990	129	105	68	110	0	100
1991	268	342	131	244	149	95
1992						
Kg/Ha 1990	162	113	297	170	0	88
1991	636	634	399	647	316	260
1992						
Kg/Tree 1990	1,3	1,1	4,4	1,5	0,0	0,9
1991	2,4	1,9	3,0	2,7	2,1	2,7
1992						
Tapping 1990	N	N	N	N	N	N
System 199	N	N	N	N	N	N
199	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8
frequency	12/y	12/y	12/y	12/y	12/y	12/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	240	240	240	240	240	240

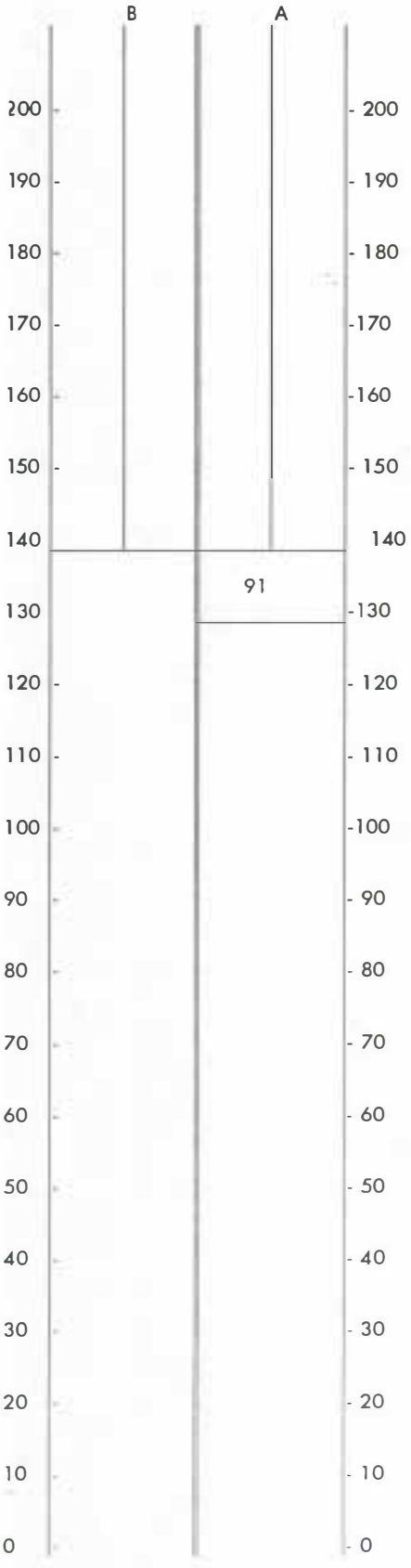
Date of visit : 3/6/92
Name of the plantations : HALUMBE
Block : 8 (associated 9-7-13-14-15-19-20-23-24-26-27-28-29-33-36)
area : 17 ha
clone : PB 260
date of planting : 1985
date of opening : 1990



BLOCKS	07	08	09	13	14	15	19	20
Ref. block	8	8	8	8	8	8	8	8
PLANTING	1985	1985	1985	1985	1985	1985	1985	1985
CLONE	PB 260	PB 260	PB 235	PB 235	PB 235	PB 235	PB 235	BPM 1
Area (Ha)	2,93	17,76	52,91	4,02	7,26	4,89	8,66	27,18
Stand 1990	227	172	126	153	114	142	108	64
1991	287	281	251	301	180	245	264	251
1992								
Kg/Ha 1990	747	559	385	688	333	422	443	224
1991	878	932	632	974	690	905	766	586
1992								
Kg/Tree 1990	3,3	3,3	3,1	4,5	2,9	3,0	4,1	3,5
1991	3,1	3,3	2,5	3,2	3,8	3,7	2,9	2,3
1992								
Tapping 1990	N	N	N	N	N	N	N	N
System 199	N	N	N	N	N	N	N	N
199	N	N	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8	0,8	0,8
frequency	5/y	5/y	5/y	5/y	5/y	5/y	5/y	12/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	100	100	100	100	100	100	100	240

BLOCKS	23	24	26	28	29	33	36
Ref. block	8	8	8	8	8	8	8
PLANTING	1985	1985	1985	1985	1985	1985	1985
CLONE	PB 260	PB 260	PB 260	PB 260	PB 260	PB 260	PB 260
Area (Ha)	0,90	18,20	10,80	6,99	10,15	11,96	14,45
Stand 1990		132	81	191	262	238	209
1991		273	158	203	333	321	274
1992							
Kg/Ha 1990		727	445	791	990	1005	659
1991	0	1156	750	1205	1389	1459	1061
1992							
Kg/Tree 1990		5,5	5,5	4,1	3,8	4,2	3,2
1991		4,2	4,7	5,9	4,2	4,5	3,9
1992							
Tapping 1990	N	N	N	N	N	N	N
System 199	N	N	N	N	N	N	N
199	N	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,8	0,8	0,8
frequency	5/y	5/y	5/y	5/y	5/y	5/y	5/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	100	100	100	100	100	100	100

Date of visit : 3/6/92
Name of the plantations : HALIMBE
Block : 25 (associated blocks 24-30-31-32-35-36-37-38-39-40)
Area : 14 ha
Clone : PR261
Date of planting : 1986
Date of opening : 1991

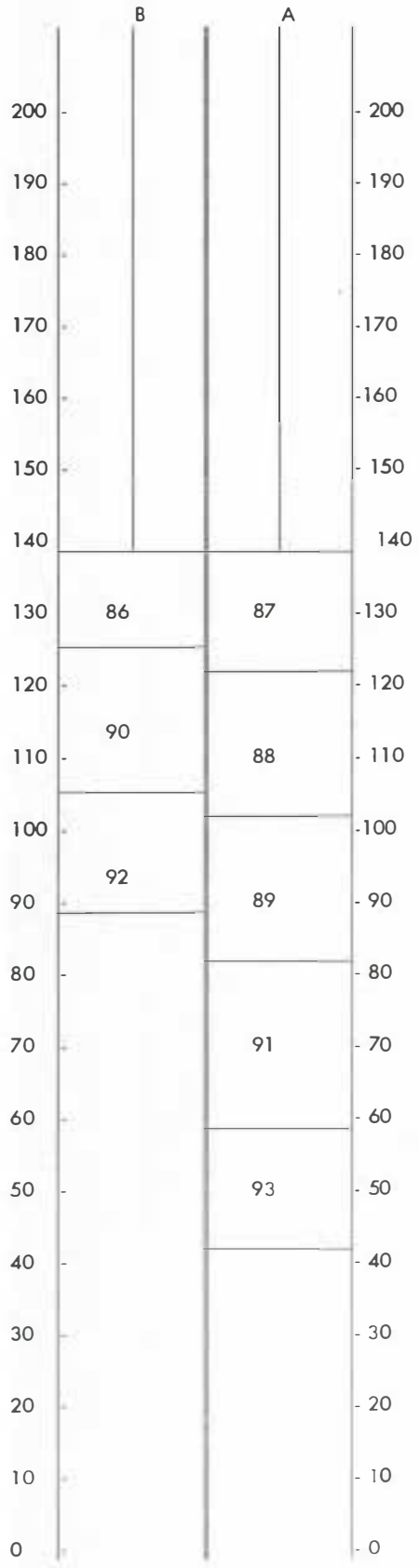


BLOCKS	25	30	31	32	24	35
Ref. block	25	25	25	25	25	25
PLANTING	1985	1985	1985	1985	1986	1986
CLONE	PR 261	PR 261	PR 261	PR 261	PB 260	PR 261
Area (Ha)	13,80	23,91	25,38	50,23	20,43	12,90
Stand 1990	0	0	0	0	0	0
1991	123	145	93	113	188	206
1992						
Kg/Ha 1990	0	0	0	0	0	0
1991	86	161	324	140	293	268
1992						
Kg/Tree 1990	0,0	0,0	0,0	0,0	0,0	0,0
1991	0,7	1,1	3,5	1,2	1,6	1,3
1992						
Tapping 1990	0	0	0	0	0	0
System 199	N	N	N	N	N	N
199	N	N	N	N	N	N
TS 1993	N	N	N	N	N	N
Stim. g/tree	0,8	0,8	0,8	0,8	0,7	0,7
frequency	5/y	5/y	5/y	5/y	4/y	4/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	100	100	100	100	70	70

BLOCKS	36	37	38	39	40
Ref. block	25	25	25	25	25
PLANTING	1986	1986	1986	1986	1986
CLONE	PB 260	PB 235	PB 260	PB 260	PB 260
Area (Ha)	19,94	45,60	35,16	38,33	24,86
Stand 1990	0	0	0	0	0
1991	252	269	210	113	93
1992					
Kg/Ha 1990	0	0	0	0	0
1991	693	887	245	101	68
1992					
Kg/Tree 1990	0,0	0,0	0,0	0,0	0,0
1991	2,8	3,3	1,2	0,9	0,7
1992					
Tapping 1990	0	0	0	0	0
System 199	N	N	N	N	N
199	N	N	N	N	N
TS 1993	N	N	N	N	N
Stim. g/tree	0,7	0,7	0,7	0,7	0,7
frequency	4/y	4/y	4/y	4/y	4/y
% Ethrel	2.5%	2.5%	2.5%	2.5%	2.5%
a.i./tree	70	70	70	70	70

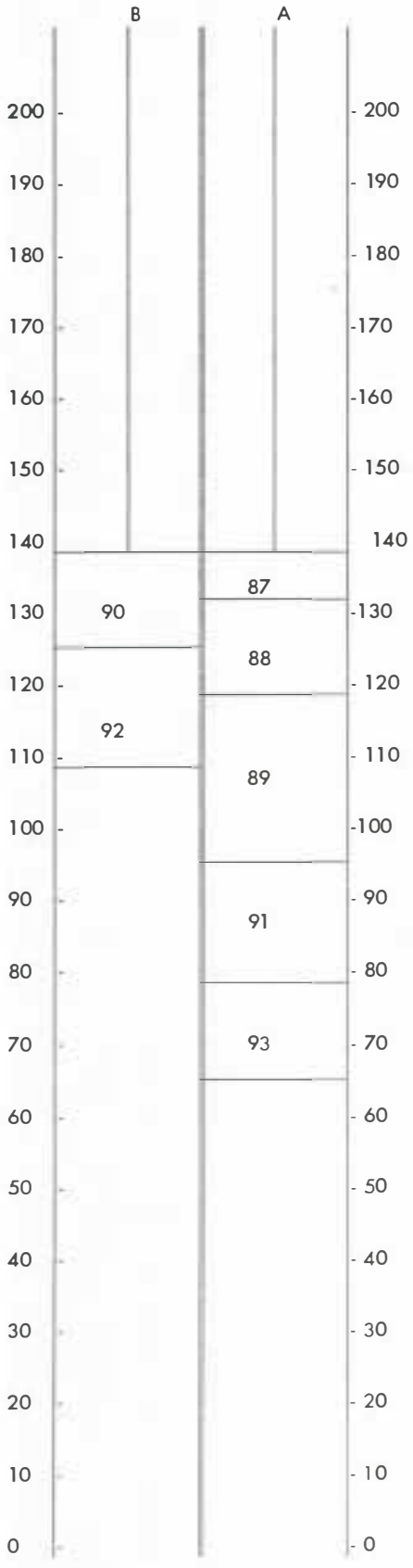
A N N E X E S

Date of visit : 3/6/92
Name of the plantations : HAUMBE
Block : 7
area : 13 ha
clone : GT 1
date of planting : 1980
date of opening : 1986



BLOCKS	07
Ref. block	7
PLANTING	1980
CLONE	GT 1
Area (Ha)	13,29
Stand 1990	198
1991	248
1992	
Kg/Ha 1990	747
1991	878
1992	
Kg/Tree 1990	3,8
1991	3,5
1992	
Tapping 1990	N
System 199	N
199	N
TS 1993	N
Stim. g/tree	0,8
frequency	10/y
% Ethrel	5.0%
a.i./tree	400

Date of visit : 3/6/92
Name of the plantations : HALIMBE
Block : 12
area : 36 ha
clone : GT 1
date of planting : 1981
date of opening : 1987



BLOCKS	12
Ref. block	12
PLANTING	1981
CLONE	GT 1
Area (Ha)	34,80
Stand 1990	236
1991	238
1992	
Kg/Ha 1990	819
1991	940
1992	
Kg/Tree 1990	3,5
1991	3,9
1992	
Tapping 1990	N
System 199	N
199	N
TS 1993	N
Stim. g/tree	0,8
frequency	10/y
% Ethrel	5.0%
a.i./tree	400

INFLUENCE OF THE METHOD OF STIMULATION, THE CONCENTRATION OF THE STIMULANT AND THE FREQUENCY OF ITS APPLICATION ON THE YIELD OF GT 1 IN THE IVORY COAST

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ABSTRACT

A trial lasting 6 years was undertaken in the Ivory Coast to study the effect on GT 1 of different types of stimulation, concentration and frequency of stimulation as much from the point of view of yield as of growth, thickness of renewed bark, rubber and sucrose content and dry cut rate.

The best results were obtained with 8 - 10 annual stimulations at the rate of 1 g per tree on panel at 2.5% active ingredient.

INTRODUCTION

Since the discovery of the action of ETHREL upon latex yield in Hevea brasiliensis a great number of experiments have been sut up to define its method of use : application, frequency and concentration of the stimulant.

The first application was made on scraped bark under the cut (1,2). Subsequent trials compared this method of application with another on renewed bark above the cut or on the groove after removal of tree lace. At the same time as these different methods of application, trials on frequency of application and especially of concentration of the stimulant took place in Malaysia (3,4,5,6,7,8,9, 10,11), in Indonesia (12,13), in Thailand (14,15,16), in the Ivory Coast (17,18) and in Sri Lanka (19).

This study assesses the results obtained in the Ivory Coast after 6 years of exploitation of trees stimulated with different methods, frequency of application and concentrations of the stimulant.

MATERIALS AND METHODS

This trial was conducted on tertiary sands in the Ivory Coast from July 1977 to July 1983, on the clone GT 1 planted in 1966, opened in 1972 and tapped in S. d/3 6d/7. 11 m/12 until July 1975 and in 1/2S. d/3 6d/7 (6m, 6m) 11m/12 et 5 %, Ba 2(2) 4/y until July 1977. Each of the 11 treatments is represented by 30 trees taken entirely at random on a plot of 6,25 ha. according to a one-tree plot design. A panel change took place at 1.40m in January 1980. Trees are tapped in 1/2S. d/3 6d/7 (6m, 6m) 11m/12 and stimulated with ETHREL taken from a solution at 480 g l^{-1} diluted in palm oil to obtain final concentrations varying from 1.25 at 10 % active ingredient or chloroethylphosphonic acid. Stimulations are applied on 9 cm of scraped bark, on 1 cm of renewed bark above the cut, or on the groove after removal of tree lace, generally 48 hours before tapping.

The 11 treatments are as follows :

A - ET 5%	Ba 2(2)	4/y	CONTROL
B - ET 1,25%	Ga 0,5 (-)	10/y	
C - ET 2,5%	"	"	
D - ET 5%	"	"	
E - ET 10%	"	"	
F - ET 1,25%	Pa 1(1)	10/y	
G - ET 2,5%	"	"	
H - ET 5%	"	"	
J - ET 10%	"	"	
K - ET 2,5%	Pa 1(1)	6/y	
L - ET 2,5%	"	8/y	

Yield recordings took place tree by tree on 8 cumulated tappings in polybags. A single coeeficient of transformation at each recording made it possible to calculate the dry weight of the rubber collected. Measurements of circumference were effected at 1.70m. The latex analyses were directed towards the totality of the latex from a tapping. The thickness of the renewed bark was measured at 6 years on the panel tapped in 1977. Dry cut incidence is expressed in the percentage of length of the diseased cut with relation to the total length of cuts on trees of one treatment.

RESULTS

The different methods of stimulation are compared with the system of reference used in the Ivory Coast : ET 5%. Ba 2 (2). 4/y.

Yield

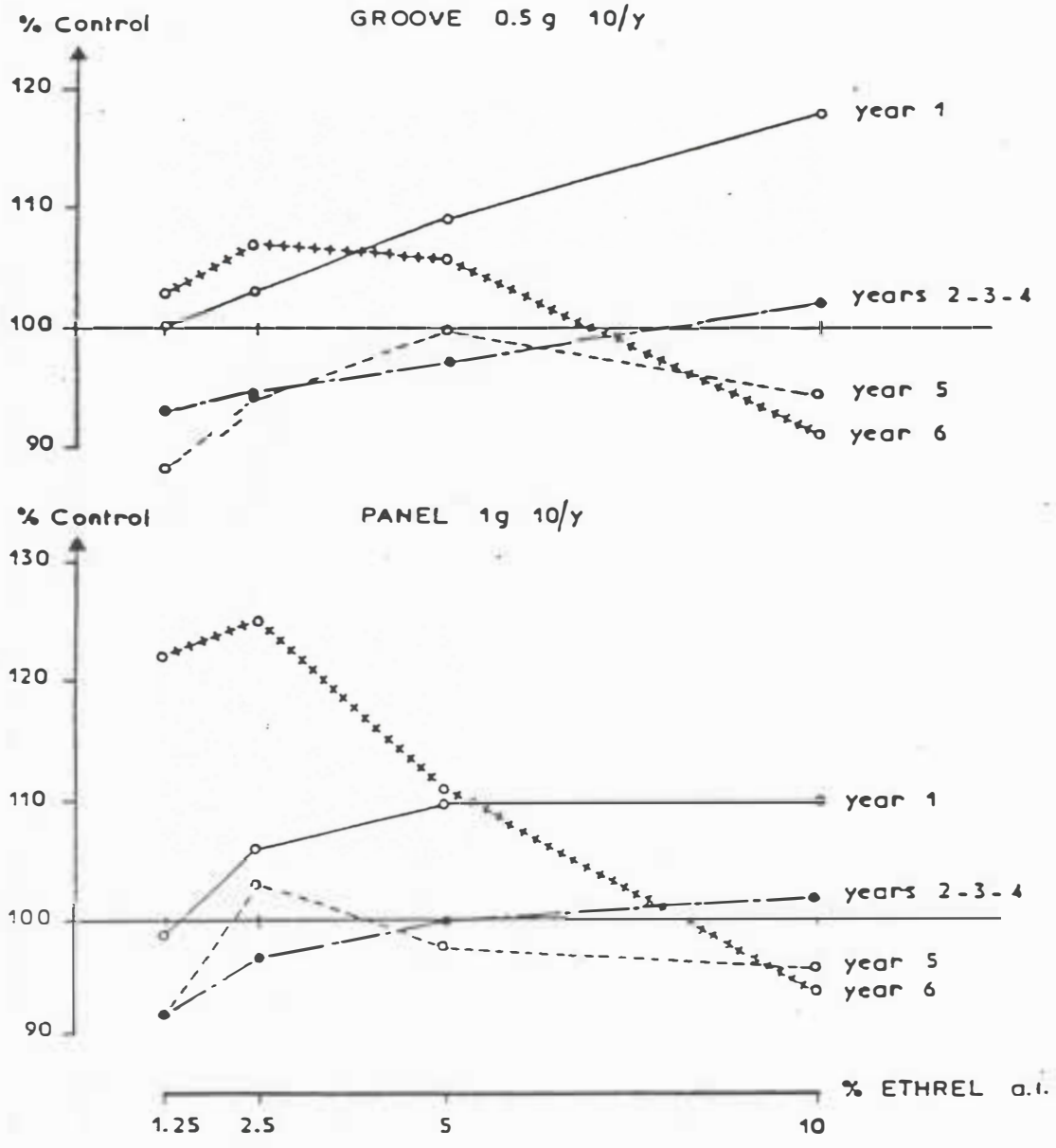
Table 1 shows that after 6 years of control there appear to be not significant differences between treatments for the $g.t^{-1}.t^{-1}$ mean.

Table 1 : Yield in relation to method of stimulation

Treatments Stimulation				Yield g.t-1						Mean g.t-1.t-1	
Type	Conc.	Frequency	a.i. mg. t-1.g-1	7/77 7/78	7/78 7/79	7/79 7/80	7/80 7/81	7/81 7/82	7/82 7/83	7/77 7/83	Control
Ba 2 (2)	5 %	4/y	400	5334	5012	6519	8642	7208	4750	64,9	100
Ga 0,5 (-)	1,25%	10/y	625	5310	5082	5869	7794	6345	4903	61,4	95
	2,5 %		125	5495	5034	5996	7944	6775	5060	64,1	99
	5 %		250	5797	4979	6153	8465	7122	5014	65,8	101
	10 %		500	6274	5209	6788	8568	6749	4336	66,1	102
	Mean Ga			5719	5076	6202	8193	6748	4828	64,4	
Pa 1 (1)	1,25%	10/y	125	5255	4774	5806	7884	6856	5777	62,9	97
	2,5 %		250	5645	5200	6165	8269	7418	5940	67,6	104
	5 %		500	5847	5183	6389	8593	7081	5328	67,1	103
	10 %		1000	5887	4883	6763	8927	6910	4455	65,7	101
	Mean Pa			5659	5010	6281	8418	7066	5375	65,8	
Pa 1 (1)	2,5 %	6/y	150	5172	4878	5165	7002	6482	6091	60,9	94
		8/y	200	5507	4776	5748	7636	6923	6263	64,5	99
		10/y	250	5645	5200	6165	8269	7418	5940	67,6	104
	LSD 0,05			609	NS	695.	958	NS	1141	NS	

Fig. 1 - YIELD IN COMPARISON WITH CONTROL OF TREES WITH GROOVE OR PANEL STIMULATION.

Control stimulated on scraped bark
ET 5.0 % Ba 2 (2) 4/y



If yields are considered year by year (Table 1 and Figure 1) it will be noted that until the 4th year, with stimulation on the groove, the yield is proportionate to the concentration of the stimulant. Identical yields are obtained to those of the control with 1.25% active ingredient in the 1st and 2nd year and 10% active ingredient in the 3rd and 4th year.

In the 5th and 6th years, the concentration at 10% leads to yields inferior ro those obtained with a concentration at 5%.

With panel stimulations, the relative evolution of the response to stimulation according to the concentration of the stimulant is still more pronounced. Accumulated over 6 years the yields obtained with 10% active ingredient are slightly inferior to yields obtained with 2.5 or 5%.

Regarding the method of stimulation, with stimulation on panel, yields are obtained that are identical to those obtained with stimulation on groove where the quantity of stimulant used and thus of active ingredient, is two times less.

Finally, it is to be noted that the yields is proportionate to the number of stimulations on the panel. 8 stimulations on panel are equivalent in yield to 4 stimulations on scraped bark.

Secondary characteristics

These are summarized in Table 2.

At the end of the 4th year of the trial, it is noted that the increases in circumference are inversely proportionate to the concentration of the stimulant. They are less with stimulations carried out on bark than with those carried out on panel. After 6 years the differences disappear and the increases are identical for all treatments.

The comparison of latex analyses carried out before and

Table 2 : Secondary characteristics in relation to method of stimulation

Treatments Stimulation				Girth increment		Latex analyses				Regenerated bark	Length of dry cut mm	Number of dry trees
						D.R.C. %		Sucrose (mM)				
Type	Conc.	Freq.	a.i. $my.t^{-1}$ y^{-1}	7/77 7/81	7/77 7/83	12/79	12/82	12/79	12/82	12/77 10/83	(%) 8/83	12/83
Ba 2 (2)	5 %	4/y	400	6,0	9,6	35,7	40,6	5,1	11,1	7,9	28	2
Ga 0,5	1,25%	10/y	625	6,1	8,9	37,2	39,4	7,5	19,6	7,7	25	2
	2,5 %		125	6,2	9,2	38,6	40,3	8,1	14,5	7,0	22	4
	5 %		250	5,9	9,4	36,6	38,3	6,2	12,1	7,7	29	2
	10 %		500	5,4	8,3	31,7	39,9	3,2	14,7	8,0	41	4
Mean Ga				5,9	9,0	36,0	39,5	6,3	15,2	7,6	29	12
Pa 1 (1)	1,25%	10/y	125	7,0	10,7	35,4	39,7	4,8	13,2	8,5	12	0
	2,5 %		250	6,8	9,8	37,7	39,7	5,2	15,8	8,1	21	0
	5 %		500	6,1	10,0	36,6	41,0	4,6	14,5	7,6	20	1
	10 %		1000	5,8	9,2	35,6	37,0	5,0	10,3	8,0	40	1
Mean Pa				6,4	9,9	36,3	39,4	4,9	13,5	8,1	23	2
Pa 1 (1)	2,5 %	6/y	150	7,1	10,7	37,7	ND	10,2	ND	8,1	11	1
		8/y	200	6,3	10,7	37,2	ND	6,6	ND	8,2	18	1
		10/y	250	6,8	9,8	37,7	39,7	5,2	15,8	8,1	21	0
lsd 0,05				0,9	NS	-	NS	-	5,1	0,76	-	-

after the panel change confirms that this clone is sensitive to panel blockage. At the base of the panel the trees stimulated on groove at 10% active ingredient have DRC's and sucrose content inferior to those obtained with the other concentrations. This effect of stimulant concentration on the sucrose content disappears with the panel change.

With weak concentrations (1.25 or 2.5%) panel stimulation provides for better bark regeneration tha stimulation on groove. No marked effect has been observed either in the case of stimulant concentration or frequency of stimulation on the thickness of renewed bark.

With regard to the length of the diseased cut, it has been noticed that an increase in the concentration of the active ingredient and in the number of stimulations have a very harmful influence. If the lengths of diseased cuts are practically identical to the groove or panel stimulation, the number of trees untapped for total dryness is six times higher with groove stimulation in spite of the quantities of active ingredient being twice as small.

DISCUSSION

The influence of the concentration of the stimulant on the yield varies with the length of the trial and the method of application. The first year, all the trees were in good physiological condition and the yield was proportionate to the concentration of the chemical. It is stimulation on groove at 10% (500 mg active ingredient) which gives the highest yields, the chemical being in direct contact with the tissues. With stimulation on renewed bark the yields obtained with 500 or 1000 mg active ingredient per tree are equivalent. From the 5th and especially the 6th year of treatment the harmful influence of strong concentrations begins to be felt and leads to yields that are significantly inferior to those obtained with weaker concentrations.

In Malaysia, with the higher tapping rate in existence, responses relative to strong concentrations diminish after 3 years (5).

The very variable results of the influence of concentration on the yield reported by different authors are due not only to the planting material but also to the length of the trial and the method of application of the chemical (6).

Application on groove or on renewed bark leads in the long run to yields approximately equivalent. Application on groove if it uses less of the chemical is however not so easy to effect : the removal of tree lace is sometimes difficult and the latex flow can hinder the application of the chemical.

Stimulation on scraped bark is more efficient than on the groove or on panel since it only requires 4 stimulations to obtain the level of yield of the other trees. It is, nevertheless, longer, more costly and not so easy to apply.

Stimulation on groove is not recommended ; it leads to a renewed bark thickness slightly inferior to the panel stimulation, to a diseased cut length slightly superior, but in particular to six times the number of dry trees. When the stimulant enters directly in contact with the tissues the action is much more traumatizing.

In comparison with stimulation on scraped bark, panel stimulation leads to a better regularity of yield. 8 stimulations on the panel are equivalent to the yield of 4 stimulations on scraped bark with twice as little active ingredient per tree.

On the panel, yields obtained with 2.5% and 5% active ingredient are equivalent and it is preferable to use ETHREL at 2.5% active ingredient, the action being less traumatizing in the long run and the cost lower.

CONCLUSION

On adult GT 1 and in the conditions prevailing in the Ivory Coast it is thus preferable to use 8-10 stimulations per year on 1cm of renewed bark at a rate of 1g per tree at 2.5% active ingredient rathe than 4 stimulations on scraped bark at a rate of 2g at 5% active ingredient.

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3.3. Tapping system

The tapping systems used on the Socfindo plantations are given in the following table.

- S/2 d/3 (105 to 110 tappings annually) or S/2 d/4 (about 80 tappings annually) is applied with the number of applications of stimulant rising from 6 to 12, as a function of the frequency of tapping and the age of the trees.

- A single concentration of stimulant is applied, 2.5 % with quantities of mix varying between 0.6 and 0.8 cc as a function of the age of the trees (between 15 and 20 mg of active ingredient per tree and per application of stimulant, or about 100 to 150 mg of active ingredient per tree and per annum).

- The stimulant Ethrel mixture is prepared by simply diluting the marketed 10 % active ingredient product, ready for use, in water.

3.3.1. Tapping system and clones

The operational techniques applied at Socfindo are sensible and prudent ; it can be said however that there is no adjustment of the system as a function of the clones.

Furthermore, since GT1 is the clone most widely represented, is the system employed intensive enough to obtain maximum yields from this clone ? The experiment which is going to be set up will enable one to answer this last question.

On the other hand, we now know that under other ecological systems, the system of exploitation, in particular the frequency of tapping and intensity of stimulation, has to be modified as a function of the clones. At the moment the clones can be grouped together as follows :

I. Clones in which the flow comes easily, without strong stimulation being needed :

PB 5/51, PB 235, PB 260

II. Clones with a correct response to stimulation, considered as intermediate clones :

GT1, RRIM 600, PR 107, PB 217

III. Clones where the flow does not come easily but which respond well to strong stimulation :

AVROS 2037, PR 261

For these reasons, we recommend that stimulation should be adjusted as a function of the clones even when the trees are young.

For example, stimulation can be increased on the AVROS 2037 plot, as recommended in block sheets. But where the PB 235 clone is concerned, on the other hand, 6 application of stimulant is too high when the trees are young ; 2 to 3 are recommended.

3.3.2. Changing panels

The results obtained on the Ivory Coast, on several sites, in several trials, and on different clones (with clonal differences) showed the beneficial effect on output of balancing the cuts.

The balancing principle is based on the exploitation of different tapped areas, allowing the tree to replenish its reserves at the level of the tapping panel.

The cuts therefore need to be independent of one another, while respecting the physiological balances at tree level.

For these reasons, balancing as it is carried out at the moment on the Socfindo plantations (opening at 1.40 m on panel A, tapping for 2 years, then a change to panel B at 1.40 m) should be changed, opening the panel B half-spiral in the extension of the panel A half-spiral (see the plot records and the panel exploitation diagrams).

3.3.3. Consumption of bark

Although the amounts of bark consumed were very high at Socfindo several years ago, great advances have been made and current consumption may be considered to be normal in most cases. The annual standards for consumption are as follows, however :

1/2 S d/3 (105 tappings annually)	:	1.5 mm/tapping = about 16 cm a year
1/2 S d/4 (80 tappings annually)	:	1.7 mm/tapping = about 15 cm a year
1/4 S d/4 (80 tappings annually)	:	2 mm/tapping = about 16 cm a year

Consumption of bark is measured vertically, with an angle of incision of about 32° for descending cuts and an angle of about 40° for ascending cuts.

3.3.4. Depth

The depth is usually good. Although at one time tapping wounds could be found on the panels, at the moment tapping quality on most of the plantations is good.

3.4. Technical survey per block as control

The appendix II describes the setting up and the check plot/control record survey method which allow to use a technical tell-tale system of plantations.

This record must be set up in close collaboration with the Socfindo's agronomists for each plantation. It will be gradually set up.

5. FERTILISING

The value of manure on young crops has been broadly demonstrated in many trials. What is needed is to evaluate correctly the types of fertiliser and the quantities to be applied as a function of the soil and site. Apart from the well-known general principles, only trials on the plantations will make it possible to adjust the doses of fertiliser in the best possible manner.

Fertilising the mature crops is more complex, however, because three biological phenomena have to be considered :

the elements immobilised in the tree (growth, leaf crown, etc...)

the elements taken out by the yield

the physiological balances within the tree, which are not easy to evaluate.

With the exception of individual cases of very marked deficiency, most trials have not established a direct relationship between fertiliser applied and yield.

IRCA has long recommended two types of fertilising on mature crops :

corrective manuring
compensatory manuring

Indeed, systematic manuring is not to be recommended because not only is it anti-economic but also in some cases it may lead to imbalances.

5.1. Corrective manuring

This is the manure which is used to correct a deficiency reflected in poor growth, low element levels and/or imbalance in the leaves. If these symptoms appear, right application of fertilisers will have a direct impact on the tree's behaviour.

The way the manuring is carried out by Socfindo is very sensible in our view where monitoring the level of elements in the leaves is concerned. It would no doubt be useful to follow up the plantation units more precisely by creating a "technical data sheet" per control-block, the methodology for which is described in Appendix 2.

5.2. Compensatory manuring

This is the manure aimed at restoring to the trees the elements which have been exported with the yield. The attached table brings together the information available on immobilisation, losses through latex yield, and the comparison of the manures recommended by Tanjung Morawa and those applied by Socfindo.

STATUS OF MINERAL ELEMENTS IN TERMS OF IMMOBILIZATION AND EXPLOITATION FOR ONE TEN YEARS OLD RUBBER-TREE

(in grams per tree)

	N	P	K	Mg
1) Immobilization 10 years old tree (1)	5 165	438	1 726	818
2) Exploitation/year - tree producing 4.7 kg	31.8	7.8	28.0	5.7
- tree producing 8.8 kg (2)	80.7	24.3	75.3	13.9
3) Fertilizers recommended by TANJUNG MORAWA site MONACO 14 years old GT1 (3)	101	66	120	16
Applied by SOCFINDO production <4.7 kg	33.8	16.5	30.0	0
Applied by SOCFINDO production >4.7 kg (4)	56.3	26.4	60.0	0

(1) "Le caoutchouc naturel" - IRCA - p 103

(2) "Le caoutchouc naturel" - IRCA - p 104

(3) REKOMENDASI, PEMUPUKAN KEBUN GUNUNG MONACO TAHUN 1982, confidential document given by SOCFINDO (LAMPIRAN VIII - G. MONACO)
GT1 (1973) UREA = 225 g/t, TSP = 200 g/t, Mop = 200 g/t, Kies = 100 g/t

(4) Rates of fertilizer application based on foliar diagnosis and on stimulation for assessment of manuring recommendation on rubber (schedule n° 2 - december 1983).

The line adopted by Socfindo, which takes account of the yield level and which applies doses close to the amounts taken out, is more satisfactory than the doses applied by Tanjung Morawa. These doses are too high and certainly not economic.

In the table it is emphasized that only the immobilisation and export values as a function of 2 yield levels (low and high) are given. It should be understood that the level of the elements in the ground and the plant cover between the lines of heveas (ground cover plants, plant debris after the land has been cleared, etc.) also need to be taken into account.

date des stimulations

- Faire une mise à profondeur rapide et stimuler dès l'ouverture ou la reprise de saignée d'une encoche.

- A l'exception de la stimulation appliquée en JANVIER, toutes les stimulations sont appliquées au 2ème semestre. Ce déséquilibre accentue encore plus les productions du 2ème semestre par rapport au 1er.

  On propose de stimuler en JANV-FEV et début MARS. Ne pas stimuler durant la période coïncidant avec la 2ème moitié de la défoliation et la période de refoliation pour le GT1 il semble que cette période au NORD SUMATRA soit 15 MARS - DEBUT JUIN.

  Les stimulations doivent être reprises dès le 15 Juin pour s'étaler jusqu'en Décembre.

  La courbe de production de l'essai de saignée de LIMA - PULUH met en évidence des productions supérieures à 40 gr. / arbre / saignée jusqu'à la MI-MARS.

quantité de matière active

Dans les conditions d'application du stimulant à AEK - PAMIENKE, nous avons pu mesurer la quantité de mélange appliquée sur une S/4↗ :

Avec une très bonne qualité d'application, sur des arbres GT1 âgés de 20 ans, la quantité moyenne sur 100 arbres a été de 0,35 gr par arbre.

Dans ces conditions l'arbre reçoit dans les meilleures conditions :

0,35 gr x 2,5 % = 8,8 mg/m.a./stimulation
soit pour 12 stimulations 105 mg ./an/arbre

Cette quantité est faible pour le système peu intensif S/4 D/4 et pour des arbres de cet âge.

Pour toutes les S/4↗ en 1988, on recommande une stimulation à 5 % toutes les 3 saignées de Juillet à Décembre.

Les arbres recevront :

0,35 gr x 5 % = 17,5 mg/m.a./stimulation
soit au total 17,5 mg x 13 stimulations = 227,5 mg.

D'une façon plus générale, les stimulations, pour les clones appartenant aux groupes devant recevoir "strong' et medium stimulation", n'apportent pas une quantité de matière active suffisante.

Les préconisations que nous faisons sont rassemblées

PRECONISATION POUR LES STIMULATIONS DES CLONES

"STRONG et MEDIUM STIMULATION"

Système en S/2 D/4

Année de saignée	Strong	m.a/an/a mg.	Medium	m.a/an/a mg.
1ère année	0,6 gr 5 % 6 st.	180	0,6 gr 2,5 % 8 st.	120
2e et 3e année	0,7 gr 5 % 8 st.	280	0,7 gr 2,5 % 10 st.	175
4e,5e,6e année	0,8 gr. 5 % 9 st.	360	0,8 gr. 2,5 % 12 st.	240
7e - 15e année	0,8 gr 5 % 12 st.	480	0,8 gr 5 % 10 st.	400
S/2 D/4	0,8 gr. 5 % 7 st.	280	0,8 gr. 2,5 % 10 st.	200
S/4 D/4	0,4 gr. 5 % 15 st.	300	0,4 gr. 5 % 13 st.	260

QUANTITE DE STIMULATION EN FONCTION DES CLONES ET DE L'AGE DES ARBRES

année de saignée	catégorie/clone réponse à la stimulation	quantité de mélange stimulation gr	Nombre de stimulation	concentration du mélange %	quantité de matière active mg/arbre
1ère année	faible	0.6	3 ~~4~~	2.5	~~45~~ ~~60~~
	moyenne	-	8	2.5	120
	forte	-	6	5	180
2ème et 3ème année	faible	0.7	4 - ~~5~~	2.5	~~140~~ ~~160~~
	moyenne	-	10	2.5	175
	forte	-	8	5	280
4 - 5 - 6ème année	faible	0.8	5 - ~~6~~	2.5	~~100~~ ~~120~~
	moyenne	-	12	2.5	240
	forte	-	9	5	360
7ème et suivantes	faible	0.8	8	2.5	160
	moyenne	-	10	5	400
	forte	-	12	5	480
1/2 S ↑ après 15 années de saignée	faible	0.8	6	2.5	~~120~~
	moyenne	-	10	2.5	175
	forte	-	9	5	360
1/4 S ↑ à partir de la 11ème année	faible	0.4	12	2.5	120
	moyenne	-	de 12 à 20 selon	2.5 ou 5 % selon	~~120~~ à 400
	forte	-	Cas et âge	cas et âge	

STIMULATION TIME

Month / N° of stimulation	J	F	M	A	M	J	J	A	S	O	N	D
4						x				x	x	x
8	x					x	x	x	x	x	x	x
10	x	x	x		10	x	x	x	x	x	x	x
12	x	x	x			x	x	x	x	xx	x	xx
13	x	x	x			x	x	x	x	xx	xx	xx
15	xx	x	x		15	x	x	x	xx	xx	xx	xx
18	xx	x	x			xx	xx	xx	xx	xx	xx	xx
20	xx	xx	xx		20	xx	xx	xx	xx	xx	xx	xx

PG 90

7. GENERAL COMMENTS AND CONCLUSIONS

7.1. Tapping and stimulation quality

- It is worth noting the improvement in tapping quality in the SOCFINDO plantations as a whole over the past 3 years. Bark consumption has generally been reduced and, except for the odd cases noted on the block information forms, the number of wounds remains within the "norms", although it could be reduced still further.

- The remarkable efforts made to introduce, adapt and master 1/4 S↗ tapping, which is generally of good quality, should also be stressed. However, it should be remembered that with this system, which has many advantages, it is necessary to carefully control all the various parameters, including and above all the need to mark out the initial panel outlines enabling the tapping panel to be divided into 4 equal sections, and to then stick to the four separate panels. Uniform production distribution over the four years of exploitation depends on strict adherence to this rule.

- The rules to be followed for effective implementation of this tapping system are as follows:

  - clearly mark the four lines dividing the tree into 4 panels,
  - tapping cut angle: 42 - 45°,
  - avoid wounding the bark,
  - bark consumption 15 to 20 cm, for upward 1/4 S.

The attached tables give recommendations for the amount of stimulant to apply and stimulation distribution throughout the year.

7.2. Number of trees per hectare

- It would be useful to gather the information available on each block in each plantation: total number of trees, number of trees being tapped. In fact, a study of the total number of trees per hectare could explain the low production levels per hectare in certain blocks.

As an example, in the AEK - PAMIENKE Plantation:
Block 27, GT 1 planted in 1971 has 429 trees/ha being tapped
Block 14, GT 1 planted in 1979 has 297 trees/ha being tapped.

Based on the number of trees being tapped per block, production potential could be established.

For information, the attached table gives the number of trees/ha that should be tapped, depending on the age of the planting, for tree numbers at the start of tapping of between 400 and 450.